Naval Research Laboratory

Transportation Management Program

Naval District Washington

NAVAL FACILITIES ENGINEERING COMMAND

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Transportation Management Program

February 2015

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NAVFAC Naval Facilities Engineering Command

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Acronyms and Abbreviations

ART	Arlington Transit
AWI	Anacostia Waterfront Initiative
AWS	alternative work schedule
BRAC	Base Realignment and Closure
CFIP II	Corporate Facilities Investment Plan II
CLRP	Constrained Long-Range Transportation Plan
DCOP	D.C. Office of Planning
DDOT	District Department of Transportation
DEIS	Draft Environmental Impact Statement
DHS	Department of Homeland Security
DoD	Department of Defense
ETC	Employee Transportation Coordinator
FAQ	frequently asked questions
FY	fiscal year
GHG	greenhouse gas
GRH	Guaranteed Ride Home
GSA	General Services Administration
HFC	hydrofluorocarbon
HOT	high occupancy toll
HOV	high occupancy vehicle
ISC	Interagency Security Committee
JBAB	Joint Base Anacostia-Bolling
MARC	Maryland Area Rail Commuter
MTA	Maryland Transit Administration
MTBP	Mass Transportation Benefit Program
MWCOG	Metropolitan Washington Council of Governments
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command

NCI	New Communities Initiative
NCPC	National Capital Planning Commission
NCR	National Capital Region
NDW	Naval District Washington
NIF	Neighborhood Investment Fund
NRL	Naval Research Laboratory
NSF	Naval Support Facility
PWD	Public Works Department
RDT&E	Research, Development, Testing, and Evaluation
RIMP	Regionally Integrated Master Program
RMIG	Regional Mission Integration Group
RTV	Regional Transportation Vision
SOV	single occupant vehicle
TDM	Travel Demand Management
TIP	Transportation Improvement Plan
TMP	Transportation Management Program
TPB	Transportation Planning Board
VRE	Virginia Railway Express
WMATA	Washington Metropolitan Area Transit Authority
WNY	Washington Navy Yard

1.0 Introduction and Context

1.1 Goals and Objectives

The goals of this Transportation Management Program (TMP) are to enhance mobility, reduce traffic congestion, conserve energy, and improve air quality by seeking to reduce and/or shorten the number of employee single occupant vehicle trips in the workday commute to and from the Naval Research Laboratory (NRL). These goals will be achieved by encouraging and supporting a variety of commuting options, reducing the number and frequency of employee trips, and altering times in which employees commute to and from NRL.

The objective of this TMP is to document measures that will achieve quantifiable trip reduction rates, reduce vehicle miles traveled, improve and comply with TMP mode share goals, and increase average vehicle occupancy rates to help establish and maintain acceptable regional air quality, offer no degradation in vehicular levels of service, and provide a reduction in energy consumed.

Combined, these goals and objectives, and the strategies contained within this document, will contribute toward NRL on behalf of Naval District Washington (NDW) achieving the federal and local compliance goals that call for a reduction in greenhouse gases and energy use.

1.2 Transportation Management Programs

The National Capital Planning Commission (NCPC) was created by Congress to serve as the central planning agency for federal activities and interests in the National Capital Region (NCR). Section 5(a) of the National Capital Planning Act of 1952, as amended, provides that each federal and District of Columbia agency, prior to the preparation of construction plans by that agency, for proposed developments and projects or for commitments on the acquisition of land, paid for in whole or in part from federal or District funds, will consult with NCPC while preparing their plans and programs in preliminary and successive stages since such plans may affect the Comprehensive Plan for the National Capital. Normally, NCPC will not approve or recommend project plans for a facility or installation when there is no approved Master Plan for that installation.

To comply with this requirement, NDW is preparing current or updated Master Plans for most naval installations[1] within the NCR. As a precursor to the master planning effort, NDW recently developed the Regionally Integrated Master Program (RIMP). The RIMP conducted an exhaustive Land Use Analysis of existing conditions, constraints, and proposed land uses for the NDW region. To ensure the goals of the RIMP are achieved and carried out at the installation level, NDW is developing installation-specific Master Plans. The Master Plans will provide a framework to achieve efficiencies and economies in the land and facility planning processes by developing installation-specific recommendations and implementation strategies that address planning constraints and issues and provide solutions that assist the Navy in its facilities mission. NDW has also prepared a Regional Transportation Vision (RTV). The RTV addresses overall strategies and policies that influence travel behavior within NDW, and serves as a guide for completing the TMP portion of the Master Plans.

One of NCPC's main responsibilities is to coordinate federal project development within the region and, as such, NCPC completed the Comprehensive Plan for the National Capital: Federal Elements in 2004. The comprehensive plan requires preparation of a TMP for all projects that will increase work site employment to 500 or more existing and proposed employees, and encourages submission of a TMP for all master plans and projects that will increase work site employment to 100 or more employees. To conform with federal air quality regulations, local trip reduction ordinances, and NCPC planning requirements, a TMP develops a program that minimizes "single occupant vehicle" (SOV) trips to federal agency work sites to encourage more efficient employee commuting patterns.

In 2008 the United States General Services Administration (GSA), the Metropolitan Washington Council of Governments (MWCOG), and NCPC developed a handbook for preparing TMPs at federal facilities within the NCR. The handbook which was used to prepare this report,provides federal agencies within the NCR with methods and guidance for preparing a TMP. According to the handbook, while Travel Demand Management (TDM) measures are utilized to addresses overall strategies and policies that influence travel behavior, a TMP documents how these strategies and policies are applied at a given site. Both TMPs and TDM seek to optimize the use of existing and future transportation facilities in reducing single occupant automobile travel.

The guidance found in the 2008 handbook was used to develop this TMP in support of the growth inherent in the Master Plan being developed for NRL.

1.3 The Regional Transportation Vision

The Regional Transportation Vision (RTV) that was recently developed by NDW is an integrated policy that supports sustainable principles, optimizes existing and future transportation facilities, and reduces use of single occupant vehicles consistent with a leadership role in Environmental Stewardship. Due to Base Realignment and Closure (BRAC) efforts and other factors, NDW is experiencing unprecedented employment growth, and is proactively addressing transportation at a regional and installation level. The RTV demonstrates both compliance and leadership in sustainability. The RTV informs decision-making and identifies actions/strategies for implementing measures to reduce traffic congestion, fuel consumption, and costs; prevent losses in productivity; and improve air quality overall.

[1] NSF Suitland excluded.

One of the key driving factors behind reducing the number and/or distance of vehicle trips in the region is the need to reduce the amount of greenhouse gas (GHG) emissions from vehicles. Greenhouse gas emissions from motor vehicles include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbon (HFC) emissions, with CO_2 being released in the largest volumes. There are a number of cross-cutting recommendations, regulations, and Executive Orders relating to reducing GHG from motor vehicles. These initiatives include: Executive Order (EO) 13514 which mandates a 2 percent per year reduction in GHG, Energy and Independence Security Act (EISA) of 2007 requiring a 20 percent petroleum reduction by 2020 and 10 percent alternative fuel increase by 2020, the NDW Energy Vision, Maryland GHG Reduction Act of 2009 which targets a 25 percent reduction in GHG by 2020 (10 percent by 2012, 15 percent by 2015), and the MWCOG *Region Forward* calling for a 20 percent GHG reduction below 2005 levels by 2020 and an 80 percent emission reduction below 2005 levels by 2020.

The Navy is committed to demonstrating leadership in implementing measures toward achieving greater sustainability in the NDW region. As part of the Navy's program to implement Executive Order 13514, the "Sustainability Order," and in support of *Vision NDW 2035* and the federal and local compliance goals listed above, Naval Facilities Engineering Command (NAVFAC) took on development of the RTV to improve travel options and reduce installation-level environmental impacts within NDW. The RTV for NDW and its tenant commands support active mobility management and decision-making through an integrated policy that reduces traffic congestion, fuel consumption, and costs; increases worker retention, productivity, and morale; and improves air quality and attains sustainability targets.

The RTV 2035 is a holistic and forward-thinking vision by NDW to proactively address transportation, demonstrate compliance, and become a leader in sustainability. This is accomplished through overarching Guiding Principles:

Principle 1:
We are leaders in sustainable transportation and active partners in determining the region's future.

Principle 2:
We support a culture of flexibility and choices for employees' work schedules and commuting.

Principle 3:
We are committed to managing parking by supporting policy changes that discourage unnecessary parking and encourage alternative transportation choices.

Principle 4:
We foster a transportation system that maximizes accessibility, connectivity, and renewable fuel alternatives.

For the region's installations, the Navy sets the precedent to fulfill its mission while:

- Helping employees make good mobility decisions;
- Not placing an unfair burden on the regional transportation system;
- Conveying a sense of partnership and support between the Navy and its employees; and
- Improving the environment.

More specifically, the RTV focuses on mobility options for people who travel to and from all installations and guides installation-level TMPs. The RTV informs the TMPs at the installation-level to manage and reduce vehicle trips through installation-specific plans for efficient access and circulation, effective leadership, and multi-mode choices for employees. The TMPs implement the RTV locally by applying RTV strategies for partnerships, information-sharing, employee incentives, land use, parking, mobility options, and alternate fuel vehicles. By implementing the RTV strategies and goals at the installation level, NRL's TMP will play a large role in the installation achieving the GHG and energy reduction goals required by federal and local sustainability mandates (e.g., EO 13514, EISA of 2007, etc.).

1.4 The Naval Research Laboratory

NRL is located on Overlook Avenue SW east of the Potomac River, west of the Navy Bellevue Housing and I-295, south of Joint Base Anacostia-Bolling (JBAB), and north of the District of Columbia Blue Plains Wastewater Treatment Plant. The site is located across the Potomac River from Alexandria in southwest Washington, D.C.[2] within Ward 8. The facility is approximately 131 acres in area with approximately 93 buildings and 2,814 parking spaces. The 2,814 parking spaces include 2,745 nominally available to employees, with 2,341 unrestricted spaces, 44 handicapped, and 360 reserved. See Table 04 referenced is Section 2.8 for details. Figure 01 shows the facility location within a regional context and Figure 02 illustrates the local context.

NRL employs approximately 4,872 people including military officers, enlisted men and women, and civilians. Many of the research staff have doctoral degrees or master's degrees.[3] The demographic make-up of the workforce at NRL averages 44 years of age.

NRL is the "corporate" research laboratory for the Navy and Marine Corps. As such, NRL conducts a broad program of scientific research as well as technology and advanced development. NRL is a campus-like complex of diverse scientific facilities, with a staff of researchers, engineers, technicians, and support personnel. Overall, laboratory management is under the direction of a Navy officer and civilian research director. The internal organizational structure is divided into five directorates, three of which conduct scientific research, including the Naval Center for Space Technology.

NRL began operations in 1923 as the first modern research institution created within the United States Navy, and was developed based on a concept by Thomas Edison. With the establishment of the Office of Naval Research in 1946, NRL was placed under the direction of the Chief of Naval Research. In 1992, the Secretary of the Navy consolidated existing research and development facilities at NRL to form the single corporate laboratory community it is today.

[2] South Capital Street, just east of the installation, defines the east and west quadrants of Washington, D.C. All areas west of this street are technically in southwest.
[3] http://www.nrl.navy.mil/

Figure 01: Regional Location of NRL

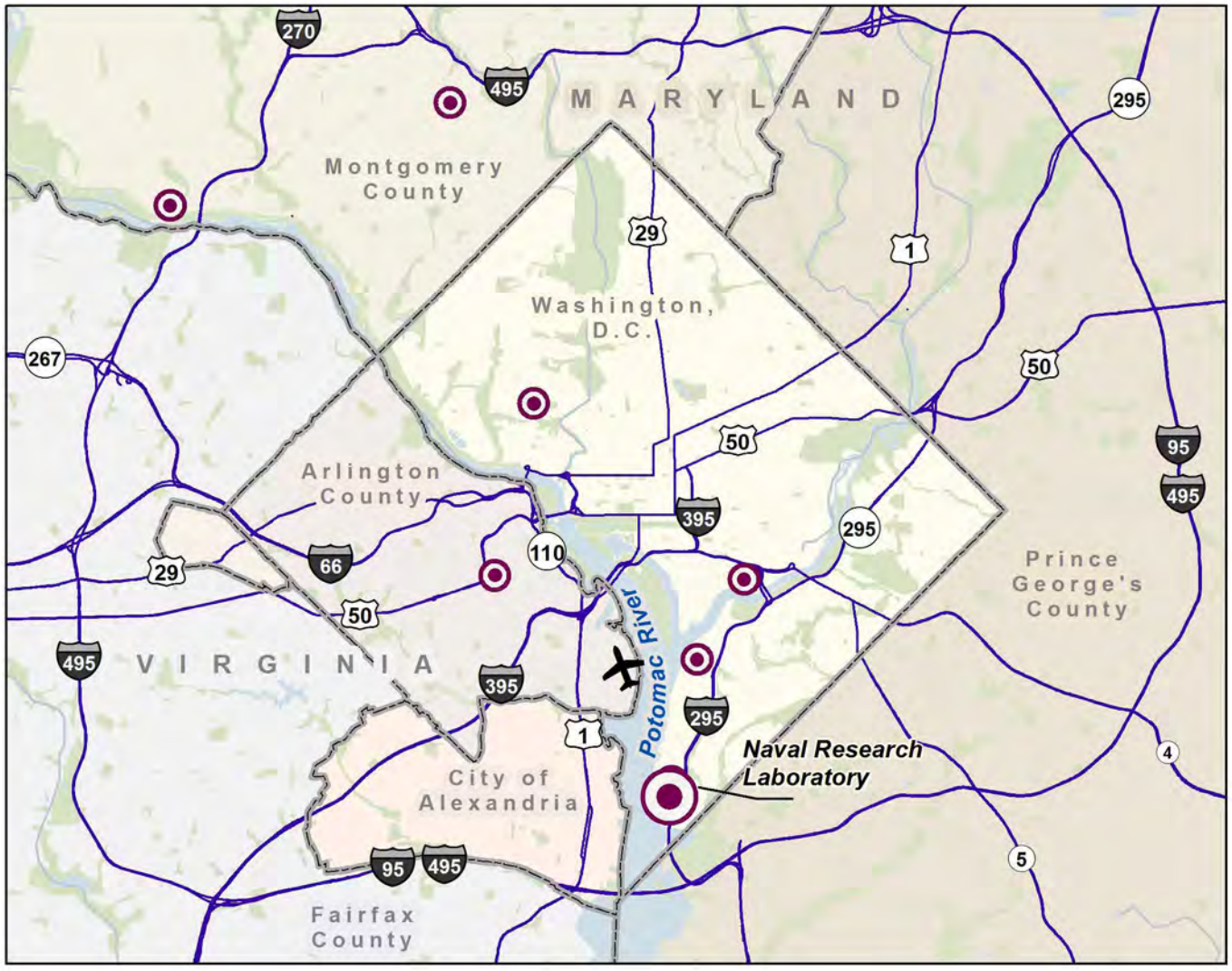
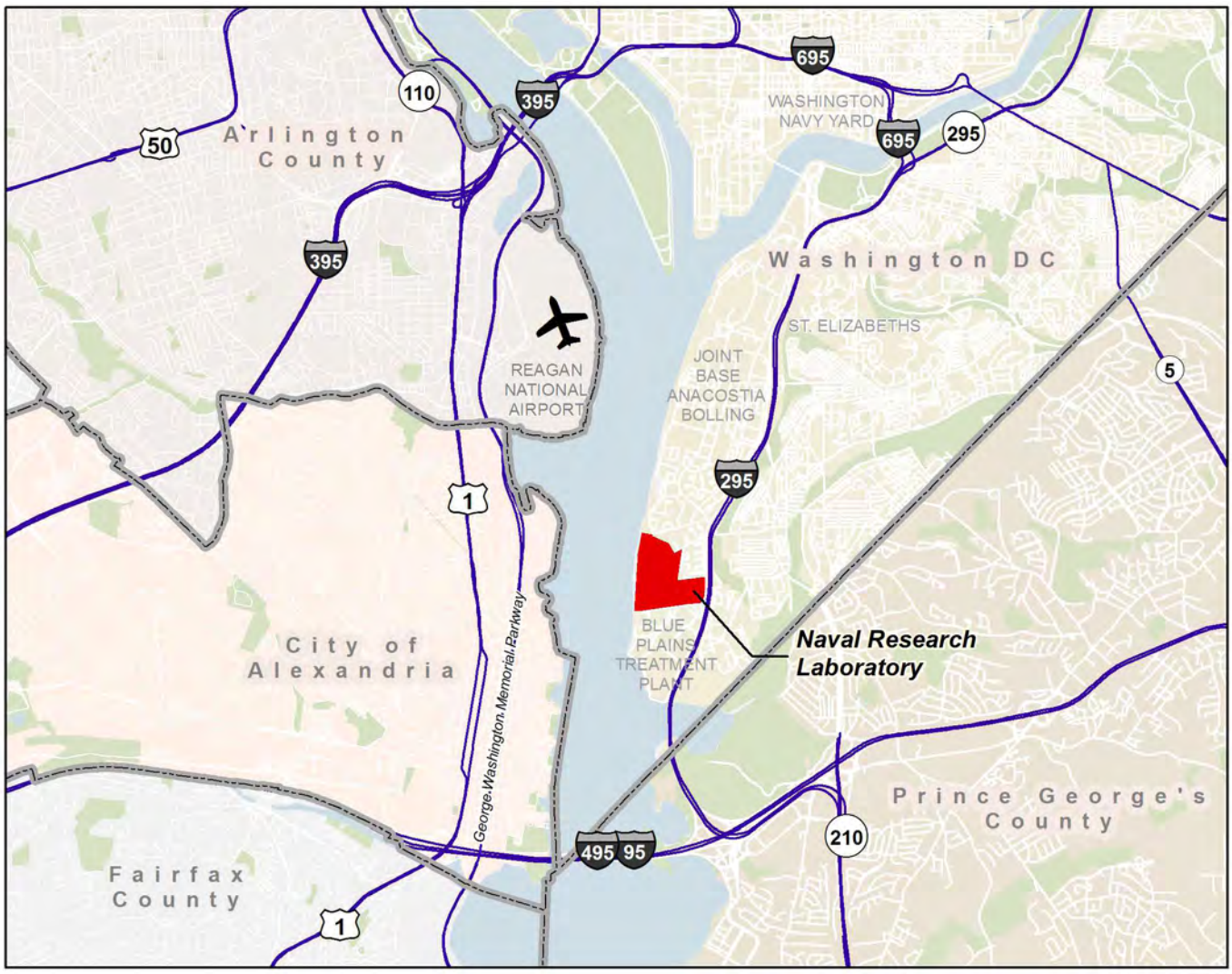


Figure 02: Vicinity Map of NRL and Neighboring Land Uses



Reagan National Airport

Major Roadway

Local Roadway

County/Jurisdiction Boundary

Park/Green Space

N

0 0.5 1 2

Miles

Sources:
Washington, D.C. OCTO/GIS, 2012
Naval District Washington, 2010

2.0 Existing Transportation Conditions[4]

NRL is located along the Potomac River in a suburban area within Ward 8 in southwest Washington, D.C. The area contains a mixture of land uses including primarily government and military facilities as well as other institutional facilities. NRL is accessible via highways, arterial streets, collector roads, and a few public transit modes. Access to the area can be gained via I-295, Overlook Avenue SW, and Shepherd Parkway SW. Mass transit services are described in Sections 2.1 through 2.3.

2.1 Metrorail and Bus Services

The Washington, D.C. Metrorail (or Metro) and Metrobus are operated by the Washington Metropolitan Area Transit Authority (WMATA). The Metro has five lines with 86 stations in D.C., Virginia, and Maryland while Metrobus has 319 routes and over 12,000 stops in the metropolitan Washington area. The closest metro station to the installation is the Congress Heights Station on the Green Line. At 2.6 miles away, the station is not within walking distance and no direct bus connections are available. The Anacostia Station, also on the Green Line, is approximately 3.4 miles from the NRL gate and requires a transfer to the A4/W5 Metrobus to access NRL. No buses from Virginia serve either of these Green Line stations or NRL itself.

The A4/W5 is the only local (non-commuter) bus line that services NRL. The A4/W5 bus provides service between the Anacostia Metro Station and D.C. Village. During the peak commuting periods (6 AM to 9 AM; 3:30 PM to 6:00 PM), the route splits and the A4 serves Ft. Drum (not NRL during this period) and the W5 serves NRL and the Blue Plains Wastewater Treatment Plant at the southern end of the route. The morning and evening peak commuting trips on the W5 from the Anacostia Metro Station to the stop outside of NRL are scheduled to take an average of 11 to 13 minutes, provided there is no wait for the bus. Outside of peak hours, the trip on the A4 line from the Anacostia Metro Station to the stop outside NRL is an average of 22 minutes, provided there is no wait for the bus. The buses leave approximately every 20 minutes during peak periods. A summary of the local bus lines serving NRL is shown in Table 01.

TABLE 01: METROBUS SERVICE SERVING NRL

Route	Name	Headway	Origin	Destination
A4, W5	Anacostia-Fort Drum Line	A4 (non-peak): 15-20 minutes in AM; 20-30 minutes in PM W5 (peak): 18-20 minutes	D.C. Village	Anacostia Metro Station

Source: WMATA Website

[4] The following resources were used to inform this section of the TMP: http://www.wmata.com/index.cfm; http://www.vre.org/, http://prtctransit.org/; http://mta.maryland.gov/services/marc/; www.slug-lines.com; DDOT street Functional Classification Map, August 22, 2006; http://www.loudoun.gov/Default.aspx?tabid=785; http://www.capitalbikeshare.com/.

2.2 Commuter Rail Service

The Washington, D.C. metropolitan area is served by two commuter rail system and Amtrak. Virginia Rail Express (VRE) operates 30 trains a day on two commuter rail service lines from points in Virginia into Washington, D.C., stopping at L'Enfant Plaza Station and Union Station within the District. Maryland Area Regional Commuter (MARC) operates 90 trains a day on three service lines from points in Maryland and West Virginia to Union Station. There is no expansion of services expected for both rail systems in the foreseeable future.

Direct access to these services is not available at NRL and requires a transfer or connection to at least one other type of service or transportation mode for access.

2.3 Commuter Bus Service

Maryland Transit Administration (MTA) provides an express commuter bus service to NRL via the No. 907 bus line. The 907 line originates in La Plata, Maryland (Charles County) with Park and Ride locations available in La Plata, at South Potomac Church, and at St. Charles Towne Plaza. The 907 bus makes stops at NRL and at the Bolling portion of Joint Base Anacostia-Bolling (JBAB) then continues into Washington, D.C. where it makes numerous stops. The run time from La Plata to NRL is approximately 1 hour and the bus departs approximately every 30 minutes during the morning peak period, as shown in Table 02. However, this route only has limited service hours with limited running frequency, particularly in the morning. Figure 03 shows the 907 commuter bus line in a local context, and Figure 04 shows the full No. 907 Route.

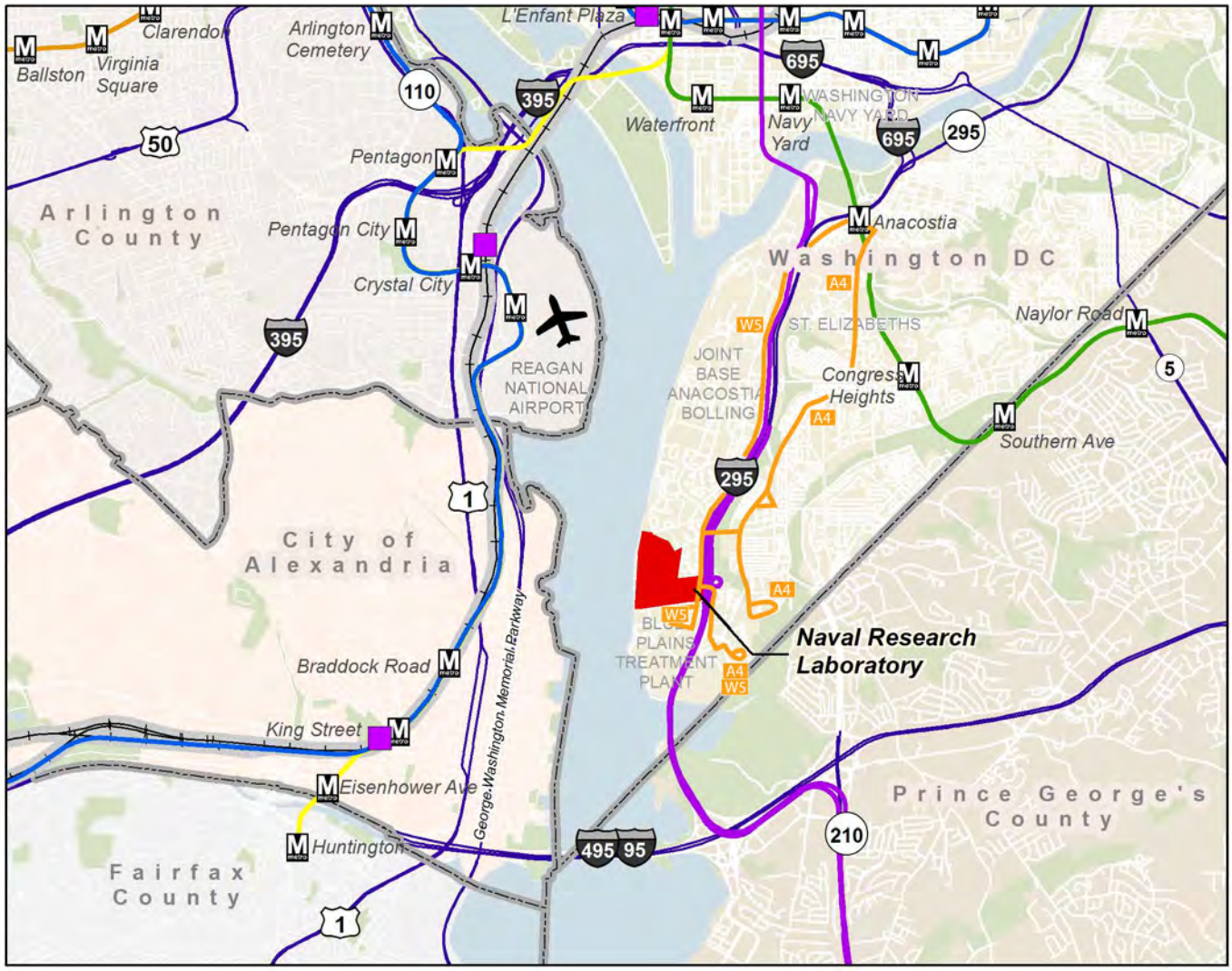
There are currently no commuter buses from Virginia, Annapolis, or the western or northern suburbs in Maryland that directly serve NRL. The Martz DC19 commuter bus from Fredericksburg, Virginia serves the neighboring JBAB installation, but does not have any stops at NRL. The service only runs once in the morning and once in the afternoon Monday through Friday.

TABLE 02: MTA NO. 907 SERVICE SCHEDULE

MTA No. 907 Service at NRL *(Overlook Avenue and Laboratory Road)*							
Northbound from La Plata / Waldorf to Washington, D.C. (AM)							
5:45		6:18		6:52		7:39	
Southbound from Washington, D.C. to Waldorf / La Plata (PM)							
3:44	4:04	4:19	4:39	4:59	5:14	5:34	5:54

Source: MTA Website

Figure 03: Existing Transportation Services



Reagan National Airport

Major Roadway

Local Roadway

County/Jurisdiction Boundary

Park/Green Space

VRE Train Station

MTA Bus 907

Metro Station

Metro System

Blue Line

Green Line

Orange Line

Metrobus Routes

A4

N

0 0.5 1 2

Miles

Sources:
Washington, D.C. OCTO/GIS, 2012
Naval District Washington, 2010
WMATA, 2013
MTA, 2013

Figure 04: MTA No. 907 Commuter Bus Line

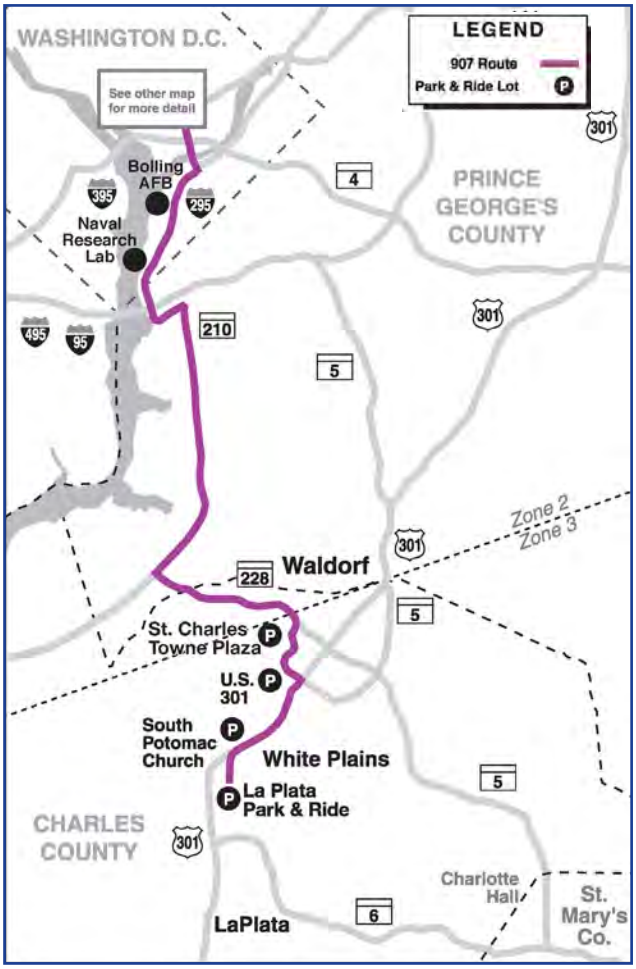
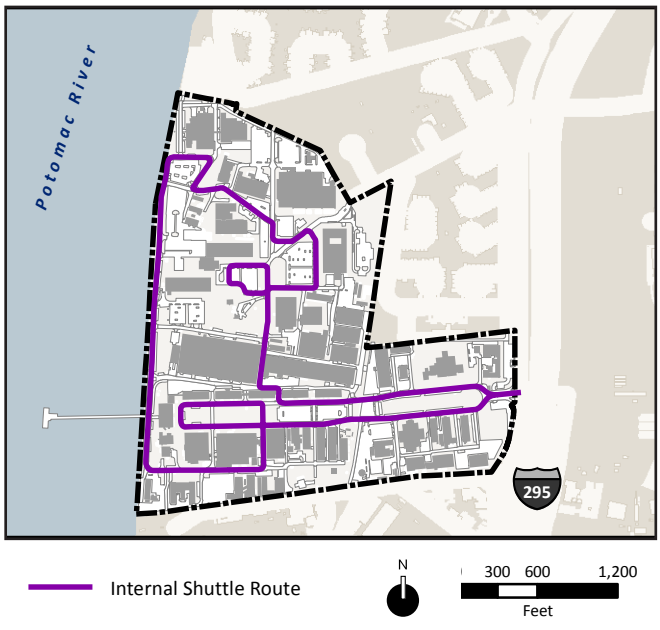


Figure 05: Installation Shuttle Service



2.4 Shuttle Service

There is currently an internal shuttle service that carries NRL employees/visitors to locations within the installation, shown in Figure 05. The Department of Defense (DoD) shuttle does not service the NRL facility. There is no shuttle service provided to or from local transit facilities for any locations on the installation.

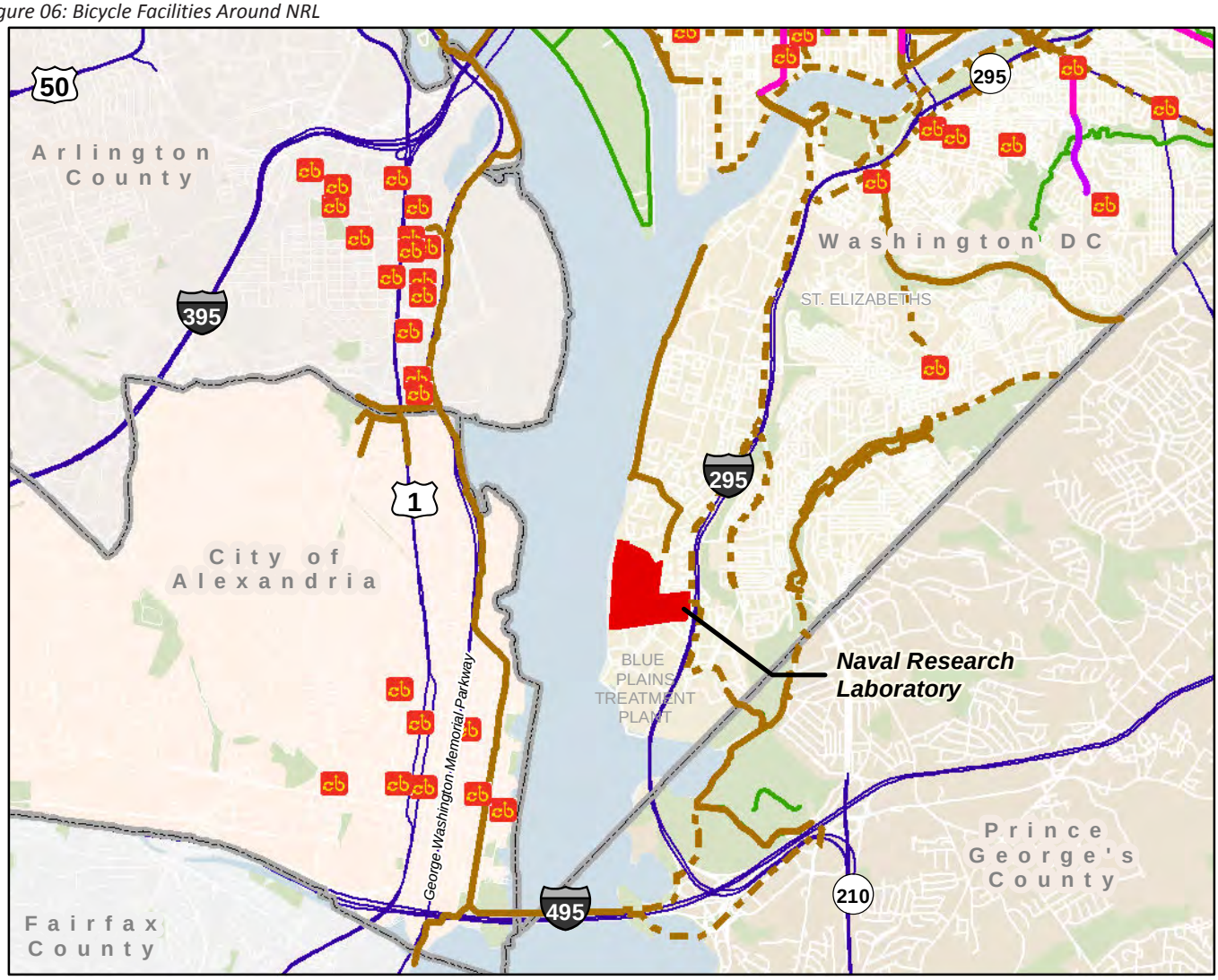
2.5 Bicycles and Pedestrians

Except for several off-street trails through nearby Oxon Run Park and small segments of on-street signed routes connecting or extending these trails, no other designated bicycle routes are in the vicinity of NRL (Figure 06). The closest designated bike lanes are provided along a short segment of South Capitol Street SW and Suitland Parkway and do not themselves provide connections to many areas where employees may travel from. The South Capitol Street bike lanes to the north of the installation end at the Defense Boulevard intersection on the JBAB installation several miles north of NRL; cyclists departing from NRL must use Overlook Avenue SW and JBAB installation roads to access those bike lanes. Across the Potomac River is the Mount Vernon Trail, a paved multi-use recreation trail that parallels the Potomac River for 18 miles from Theodore Roosevelt Island to Mount Vernon, Virginia. Bicyclists from NRL can access the trail by crossing the Potomac River on the Woodrow Wilson Bridge via the pedestrian and bicycle path and by using trails and on-street signed routes south of the installation. However, the bicycle connections between the installation south to the Woodrow Wilson Bridge are missing in many areas, piece-meal, and many are intended as recreational trails through national parkland and not suited well to commuting.

Washington, D.C. has organized bike rentals in multiple locations. The Capital Bikeshare program comprises 1,100 bicycles available from 110 stations across Washington, D.C. and Arlington, Virginia. Bikes can be rented at and returned to any station near the rider's ultimate destination. The Capital Bikeshare program can be joined for 24 hours, 30 days, or a year, and provides access to their fleet of bikes 24 hours a day, 365 days a year. Bikeshare locations north of NRL include: the Anacostia Metrorail Station, Good Hope Road and Martin Luther King Avenue SE, and the Anacostia Library.

In general, the areas within the NRL site are well-suited for pedestrian travel given its moderate size. Sidewalks generally exist along primary and secondary roadways and adjacent to NRL facilities; they provide connections between facilities and access to most of the parking lots. Despite these features, a continuous pedestrian system is lacking on the installation.

Figure 06: Bicycle Facilities Around NRL



Capital Bikeshare
Existing Bike Lanes
Shared Lanes
Trail: Open
Trail: Planned/Proposed
NPS Trails
Major Roadway
County/Jurisdiction Boundary
Park/Green Space

N

0 0.4 0.8 1.6
Miles

Sources:
Washington, D.C. OCTO/GIS, 2012
Naval District Washington, 2010

2.6 Roadways

The main access way to NRL is via I-295 which is located only a short distance from the entrance to the facility (Figure 09). There are southbound and northbound exit ramps from I-295 that feed directly into the facility. The facility can also be accessed from Shepherd Parkway SW from the south and Overlook Avenue SW from the north. Shepherd Parkway can be accessed from Blue Plains Drive SW south of the facility. Overlook Avenue can be accessed from Chesapeake Street SW north of the facility. Inside the installation, the major primary roadways are Cooley and Oberlin Avenues, Magazine Road, and Smith Street (Figure 10).

2.7 Gate Counts and Vehicle Classification

The number and type of vehicles entering and exiting NRL was surveyed on February 16, 2011 during normal weather conditions. The number of pedestrians was also surveyed, although it is recognized that winter temperatures may have decreased these numbers slightly. The survey took place from 0530 - 0930 (5:30 AM to 9:30 AM) and from 1500 - 1900 (3:00 PM to 7:00 PM), and was recorded in 15 minute increments. A total of 1,996 vehicles entered NRL in the morning survey period. Based on the survey results, vehicles entered the facility during the morning survey period at a fairly steady rate between 0600 and 0930 (6:00 AM to 9:30 AM), as shown in Figure 07. The peak morning 1-hour period was the last hour surveyed from 0830 - 0930 (8:30 AM to 9:30 AM) when 623 vehicles entered, or 31.2 percent of the total. The peak 15-minute period was from 0900 - 0915 (9:00 AM to 9:15 AM) when 177 vehicles entered the facility, or 8.9 percent of the total. Appendix A contains the gate counts and vehicle classification data.

A total of 133 pedestrians entered the facility during the morning survey period. Of these, 68.4 percent, or 91 pedestrians, entered during the peak 2-hour pedestrian period from 0630 - 0830 (6:30 AM to 8:30 AM). The peak 1-hour period was from 0615 - 0715 (6:15 AM to 7:15 AM) when 62 pedestrians entered the facility, representing 46.6 percent of the pedestrians entering during the morning survey period. The peak 15-minute period was from 0700 - 0715 (7:00 AM to 7:15 AM) when 21 people entered the facility, representing 15.8 percent of the total. It is thought that many of the people counted as pedestrians may have arrived at the gate by bus and then walked into the facility.

Of the 1,996 vehicles that entered the NRL facility during the morning survey period, 95.5 percent of the vehicles that entered were SOVs (1,906 vehicles).[5] The remainder of the vehicles that entered during this period were comprised of the following: 2.7 percent were passenger cars that carpooled or had multiple occupants, 1.2 percent were classified as small trucks, 0.2 percent were large trucks, and the remaining 0.1 percent were transit vehicles. For the purposes of this count, a small truck is defined as a vehicle that is the size of a UPS-type truck or larger, but smaller than a semi-trailer. A large truck is defined as a semi-trailer or larger. Transit vehicles are defined as any vehicle that appears to have the sole purpose of transporting people, ranging from a taxi to a bus, including shuttles and passenger vans.

During the evening survey period from 1500-1900 (3:00 PM to 7:00 PM) a total of 1,993 vehicles departed the facility. As shown in Figure 08 which illustrates the vehicles departing the facility during the evening survey period, employees departed in concentrations on the hour (3 PM, 4 PM, 5 PM). During the peak 1-hour period from 1700 - 1800 (5:00 PM to 6:00 PM), 596 vehicles or 29.9 percent of the survey total exited the facility. The peak 15-minute period was from 1500 - 1515 (3:00 PM to 3:15 PM) when 187 vehicles exited the facility, or 9.4 percent of the total.

Only 17 pedestrians exited the facility during the evening survey period. These trips were fairly evenly distributed between 1500 and 1830 (3:00 PM and 6:30 PM), with 5 pedestrians exiting during the peak 15-minute period from 1630 - 1645 (4:30 PM to 4:45 PM). It should be noted that the number of pedestrians exiting the facility in the evening survey period is lower than those entering in the morning (133 entered in the morning and only 17 exited in the evening). Coupled with the fact that the number of entering and exiting vehicles is nearly the same, this indicates that the majority of entering pedestrians commute home by other means, perhaps accepting a ride from a fellow employee, or that they get a ride through the gate to the bus stop or nearby Metro station.

Figure 07: Morning Survey Vehicle Arrivals

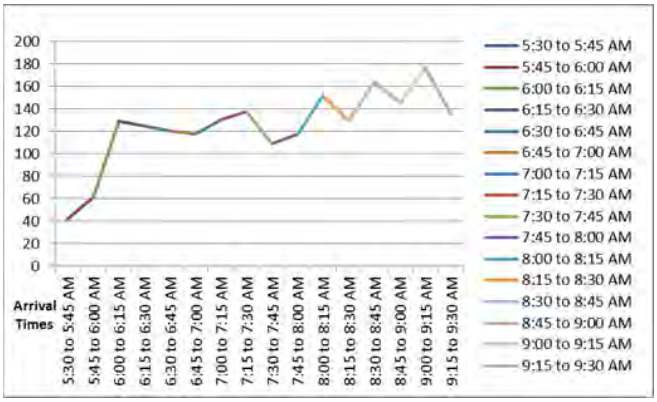
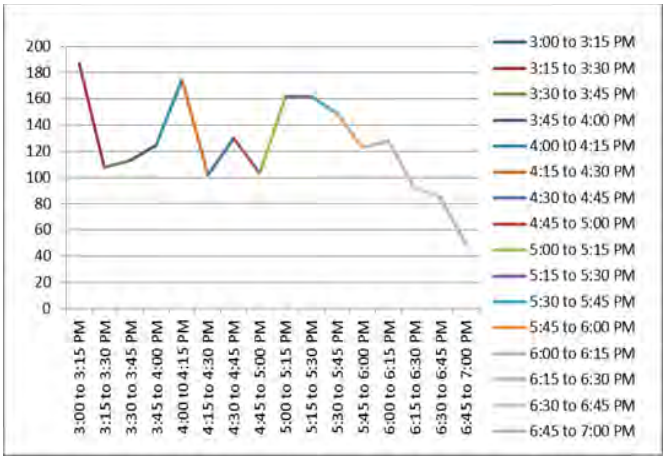


*Figure 08: Evening Survey Vehicle Departures**



**Note: The data shows that a large number of vehicles left the installation before the gate counts began at 3:00 PM.*

[5] Percentages are calculated based on number of total vehicles (that entered the site). The percentages in the Mode Split table are calculated based on the number of total people entering (or people trips).

Figure 09: Roadways Near NRL

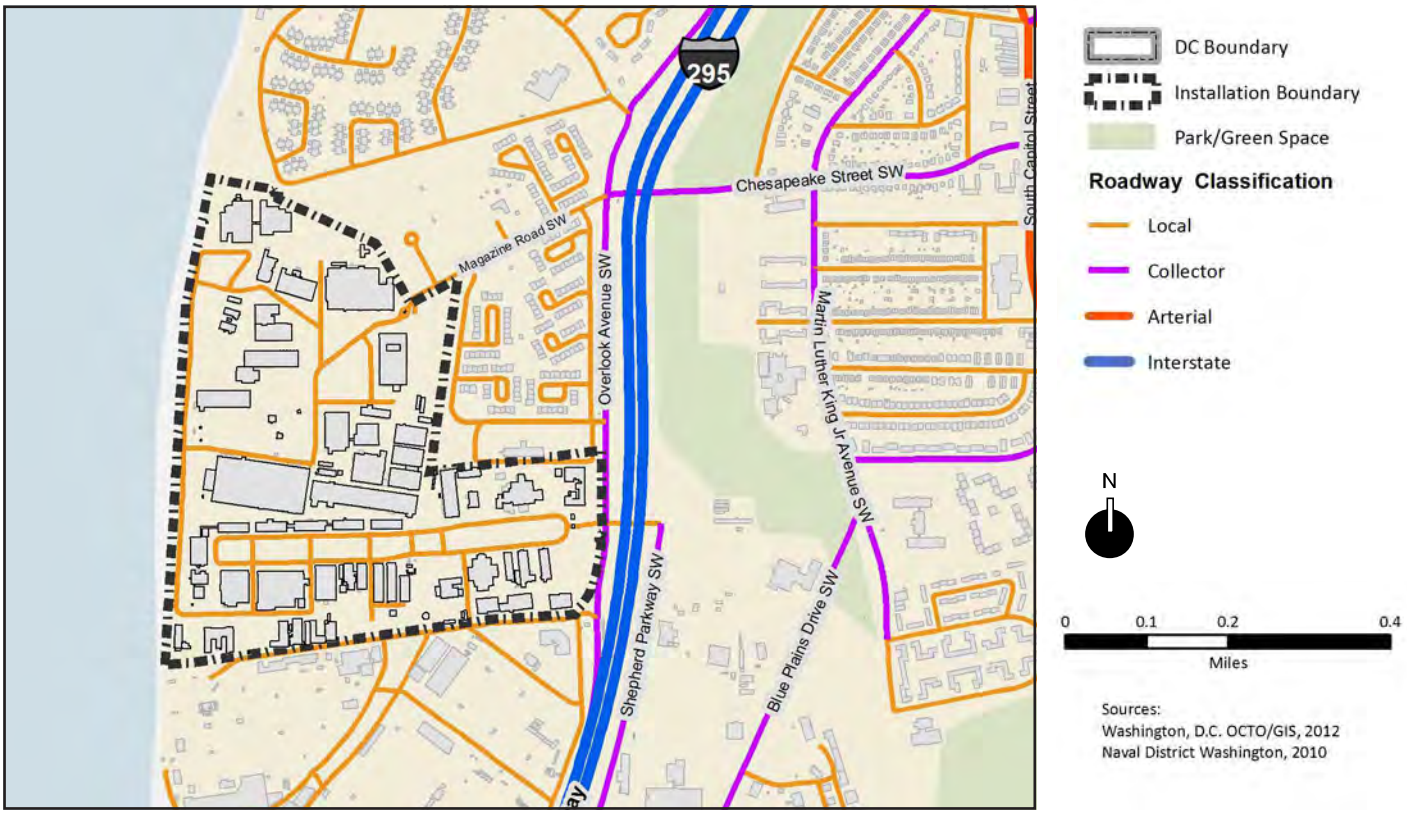
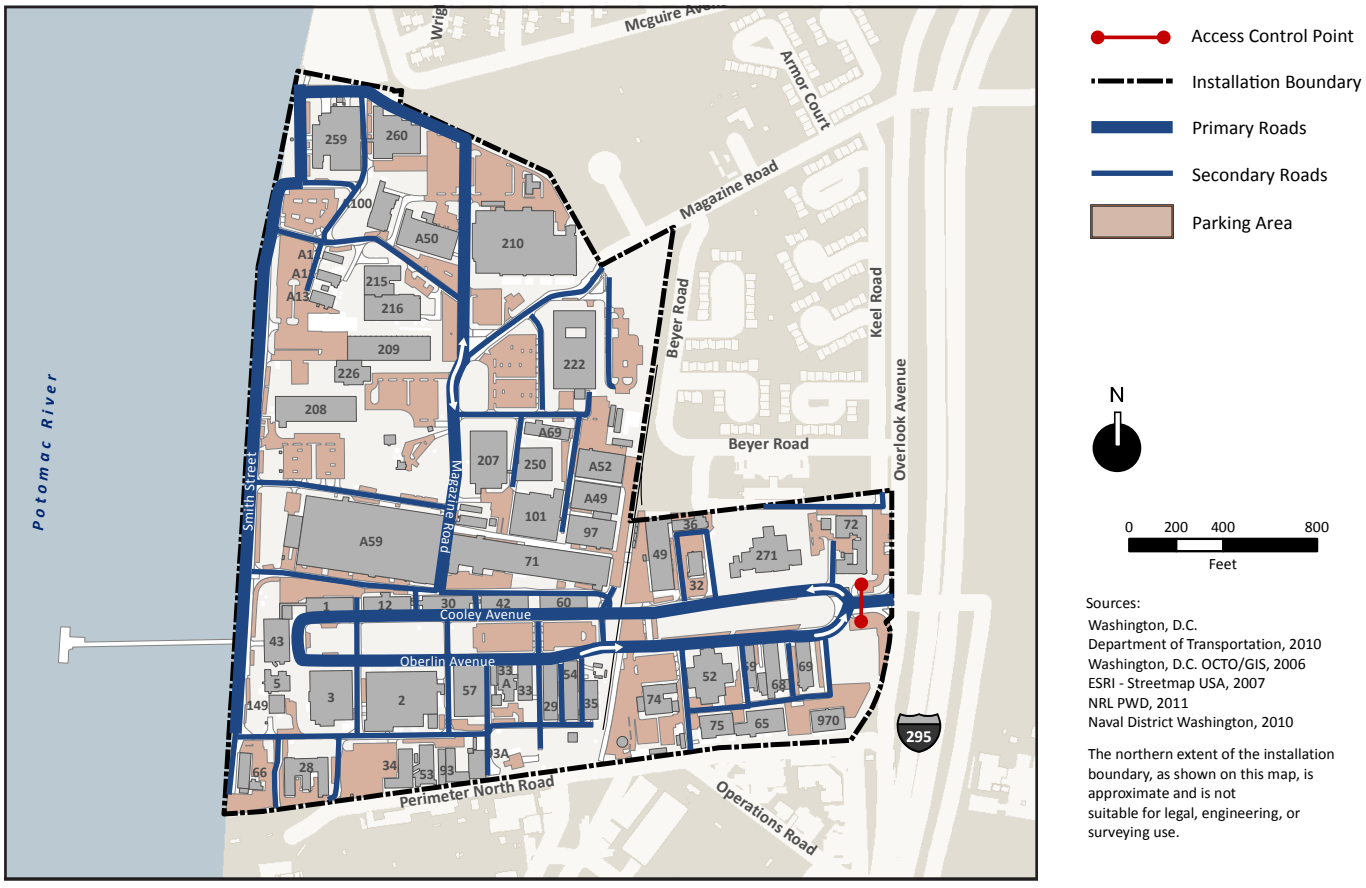


Figure 10: NRL Roadways



As NRL receives many visiting scientists and dignitaries throughout the day, it is important to note that the NRL Visitor's Center indicates that as many as 250 to 300 such visitors enter and leave the installation throughout the day. Due to the nature and the time of these trips, not all of these trips may have been captured in the gate counts.

The vehicle classification breakdown of exiting vehicles would be essentially the same as that for the entering vehicles in the morning peak survey period, with the large majority (close to 95 percent) being SOV passenger vehicles.

The percentage of NRL employees entering the installation during the morning window (2,291 out of 4,872, or approximately 47 percent) is fairly consistent with the majority of the Washington, D.C. area Naval installations which averaged between 50 and 75 percent of employees entering the installations during the morning survey window (most with entry percentages below 65 percent).

Table 03 shows the full mode split breakdown and average vehicle occupancy of vehicles entering the installation during the morning survey window, with a base estimated number of bicyclists based on survey information.

TABLE 03: TRAVEL MODE SPLIT AND AVERAGE VEHICLE OCCUPANCY *

Travel Mode	Percent of Person Trips	Person Trips (AM window)
Single-Occupant Vehicle	83.2	1906
Carpool, Vanpool, Shuttles/Bus (Transit onto Installation)	5.5	125
Pedestrians	5.8	133
Bicycles**	5.5	127
Total Person Trips		2291
Average Vehicle Occupancy		1.04

*Passenger cars with greater than 3 people were counted as having 4 people, transit vehicles with greater than 3 people were counted as having 5 people. No trucks were included in Table 04 calculations as they were likely not employees (deliveries, etc.).

** Bicycle trips were added to the gate counts to create a mode split chart that could be compared between installations. The 127 trips were estimated based on the approximate 2.4 percent of employees who responded on the NDW Transportation Survey that they were bicycle commuters.

Note: All percentages are based on person trips, not vehicle trips.

2.8 Parking Inventory

A parking survey was conducted at NRL on February 16, 2011 on a clear day normal for that time of year. The number and type of spaces was counted during this survey, and the percent occupancy for each type of space was recorded between 1000 - 1500 (10 AM and 3 PM). The results of the survey indicate that parking in unrestricted spaces at the facility is allowed largely on an ad hoc basis. Parking in restricted spaces (reserved and handicapped) is assigned parking and limited in use to the assigned employee only or specified building personnel only. Overall, NRL currently contains 2,814 parking spaces (2,745 nominally available to employees). Of those spaces, 22 spaces are used by government motorized vehicles or carts, 16 are for visitors, and 27 spaces are marked for miscellaneous visitors for meeting use, credit union visits, etc. There are also 4 spaces dedicated to truck loading/unloading. Approximately 85 percent of all employee spaces are unrestricted, 2 percent are handicapped, and 13 percent are reserved. Visitor spaces are not included in the employee spaces count and comprise almost 2 percent of all installation parking. The limited number of visitor spaces are filled on a first come first served basis. (The separate Visitor Center has parking for approximately 60 vehicles surrounding the building.) The majority of parking spaces (approximately 97 percent) are located in open lots with the remaining spaces located in three covered areas.

Most of the parking lots were not filled to capacity but several lots were above capacity by a few cars, with the highest overcapacity facility being Lot 34 with 15 cars over-parked and Lot 48 with 8 over-parked cars. Table 04 illustrates the parking breakdown at NRL and Table 05 shows the occupancy levels during the survey. Appendix B contains the results of the Parking Inventory as well as occupancy information for each parking lot, and Figure 11 shows the parking area map.

With as many as 250 to 300 visitor's throughout the day at NRL, it is likely that some visitor's park in spaces intended for employees given the small number of visitor spaces, many of which are restricted to specific users.

2.9 Support Services that Mitigate Employee Travel

High quality video conferencing and training can substitute for in-person meetings, thereby reducing workday travel. NRL has invested in video conference capabilities and makes extensive use of the technology.

2.10 Commuter Ferry and Water Taxi

Recently there has been increased interest in the possibility of using ferries to shuttle commuters to work along the Potomac River. A year-long commuter ferry market analysis is being conducted by the Northern Virginia Regional Commission to examine potential costs, travel directions, schedules, and additional information. While there are no known plans to add commuter ferry service to the NRL site, this study could provide additional information about the option. The existing NRL pier, built for larger ships, may not be correctly configured to accommodate a ferry and would also create security issues that would need to be addressed.

There are also two water taxi services that provide an alternative transportation option via the Potomac and Anacostia Rivers. American River Taxi runs a service between three locations in D.C. and the Potomac Riverboat Company runs a seasonal boat between Alexandria and the Diamond Teague Terminal (Nationals Stadium, SE D.C.) and a route between National Harbor and Alexandria.[6]

[6] http://www.capitolriverfront.org/getting-around/water

TABLE 04: PARKING INVENTORY BREAKDOWN

Employee Parking		Non-Employee Parking	
Type of Space	**Spaces**	**Type of Space**	**Spaces**
Unrestricted	2,341	Visitor	16
Handicapped	44	Carts/Gov't Vehicles	22
Reserved	360	Loading Dock	4
		Other Misc. Visitor*	27
Total	2,745	Total	69
Total Installation Parking: 2,814			

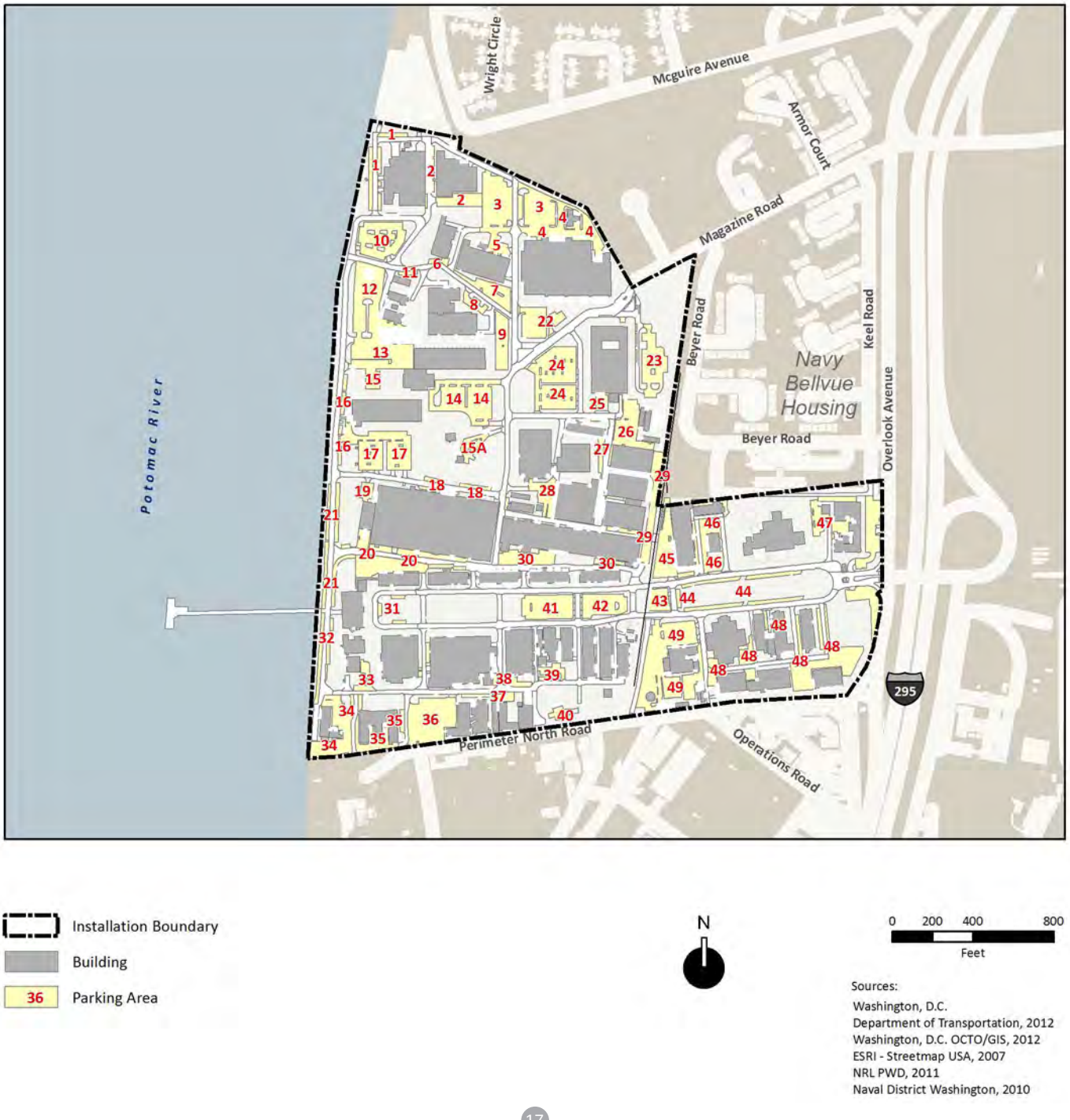
*Includes spaces marked Visitor, For Meetings Only, Credit Union or Credit Union Visitor, Supply Store Customer 30 Minutes, and TIS S/Desk Customers.

TABLE 05: PARKING SPACE OCCUPANCY

Type of Space	Percent Occupancy
Unrestricted	74%
Handicapped	27%
Reserved	62%
Visitor	50%
Carts/Government Vehicles	73%
Loading Dock	25%
Other Miscellaneous Visitor	22%
Overall*	73%

*Includes 34 cars classified as "over-parked."

Figure 11: NRL Parking Areas



2.11 Ridesharing

There are several forms of ridesharing in the Washington Metro Region, including carpooling, vanpooling, and slugging. In addition to the cost savings and reduced pollution benefits of ridesharing, rideshare users can also benefit from time savings by using any of the high occupancy vehicle (HOV) or high occupancy toll (HOT) lanes in the area. HOT lanes allow vehicles with three or more people to ride in the lanes for free and allow all other drivers to drive in the lanes for a fee. HOV-only segments of roads operate similarly but only allow vehicles with high occupancy to use the lanes, which typically operate in the rush-hour direction during the peak commuting periods. Figure 12 illustrates HOV lanes in blue and HOT lanes in green. In spite of all these HOV and HOT lanes, none of them are within the vicinity of NRL, which reduces the ability for NRL employees to gain a time advantage by carpooling, vanpooling, or commuter buses.

Carpools and Vanpools – Carpooling and vanpooling refers to several commuters traveling to work together in the same car or van. Benefits include fuel cost savings, driving cost savings, and reduced travel time as well reducing traffic congestion, reduced wear and tear on roads, and reduced pollution and greenhouse gas emissions. Depending on the highway, vehicles are allowed to use the HOV lane when there are 2 or more (HOV-2) or 3 or more (HOV-3) persons in the vehicle.

Across the region, there are several entities (federal, regional, and state) that provide official ridesharing programs to match people together when interested in forming a new or to join an already-existing carpool/vanpool. MWCOG's Commuter Connections is often considered the "official" regional rideshare matching provider. In addition to ridesharing programs, MWCOG has a specific program set-up for federal employees. In addition to MWCOG's Commuter Connections website, GWRideConnect is a free ridesharing service from the George Washington Regional Commission (GWRC) that assists persons who are seeking daily transportation from Fredericksburg, Stafford, Spotsylvania, Caroline, and King George counties to employment locations in Washington, D.C. and other locations. Other ridesharing websites include eRideshare, Vanpools.net, Commuter Solution (Howard County, Maryland), carpool world, and Patriotic Advantures.

Slugging – According to a commuter website, slug-lines.com, slugging is a term used to describe a unique form of commuting found in the Washington, D.C. area that is sometimes referred to as "Instant Carpooling" or "Casual Carpooling." It is unique because people commuting into the city stop to pick-up other passengers even though they are total strangers. However, slugging is an organized system with its own set of rules, proper etiquette, and specific pick-up and drop-off locations. There are established slug line locations in both the morning and afternoon. In slugging, a car needing additional passengers to meet the required 3-person high occupancy vehicle minimum will go to one of the known slug lines to try to find additional passengers. Based on a search of the slug-lines.com website, there are no established slug lines serving the NRL area. The lack of slugging in the NRL area can probably be attributed to several factors including the lack of HOV facilities nearby, the diversity of places employees live, and the provision of sufficient parking on the installation.

Figure 12: Local Area HOV/HOT Lanes

2.12 Transportation Survey Results

A web-based employee transportation survey, the NDW Regional Transportation Survey, was completed by employees of NDW as part of the RTV. Questions were developed to solicit information on multiple factors such as trip origin, travel mode, vehicle occupancy, ability to telecommute, and use of bicycle. The transportation survey was posted on a website for over one month and advertised to employees to improve the response rate. Each respondent identified her/his primary work location and the zip code of their primary place of residence. Over 10,000 responses were received NDW-wide, with over 650 respondents from the NRL or approximately 20 percent of the NRL workforce. A copy of the survey is available in Appendix C. The results of the survey for NRL employees are summarized below.

2.12.1 Travel Mode

The travel modes considered in the transportation survey were: drive alone, Metrorail, commuter bus, Metrobus/Circulator, carpool/vanpool, bicycle, walk, telecommute, and other. Respondents reported on the number of days that they used each option per week in both good and poor or cold weather. Based on the results of the transportation survey responses for NRL during good weather, commuters drive to work 74.4 percent of the available commuting days. All other modes combined accounted for 25.6 percent of travel. The second highest travel mode utilized at least one day per week was carpool/vanpool at 5.8 percent, with Metrorail next at 5.1 percent. The next two most prevalent forms of commuting were bicycle at 3.8 percent, public or Circulator bus at 3.6 percent, and commuter bus at 3.3 percent. The lowest categories were walk and telecommute both at 1.4 percent, and shuttle bus at 0.4 percent. During poor or cold weather the travel patterns were very similar with a small increase in SOV use (75.2 percent) and a drop in virtually all other modes, especially bicycle which falls to 1.4 percent.[7] The graphs (Figures 13 and 14) illustrate the full survey results for both good and poor or cold weather.

The difference in mode split between the employee transportation survey results and the gate counts (gate count SOV mode split of 83.2 percent and survey SOV mode split of 74 to 75 percent) can most likely be attributed to both the different sizes of the groups surveyed (gate count: 47 percent of employees, survey: 20 percent of employees) and the higher proportion of carpoolers/vanpoolers/transit users taking the survey relative to the full survey group.

A total of 614 people responded about their willingness to shift their travel mode if shuttle service was provided to and from transit service (e.g., Metrorail station). Of the portion of the 614 total reporting that they did not already take transit or walk/bike (577 people), 22.7 percent said that they would use transit, 9.9 percent said that they would be very likely to use transit, and 29.6 percent said they possibly would use transit if shuttle service was provided. Thus a total of 62.2 percent of non-transit users/walkers/bikers would switch or consider switching to transit if a reliable shuttle were provided. Additionally, 17.9 percent indicated they were not likely to use transit and 19.9 percent said that they would not use transit if shuttle service were provided. Thus 37.8 percent of non-transit users/walkers/bikers would not, or would not be likely to switch to the various transit modes.

Figure 13: Good Weather Travel Modes

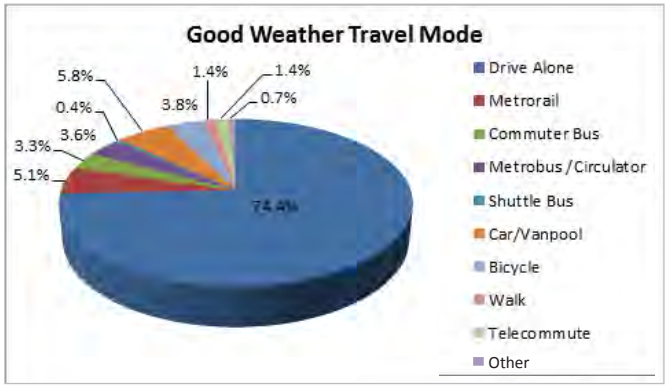
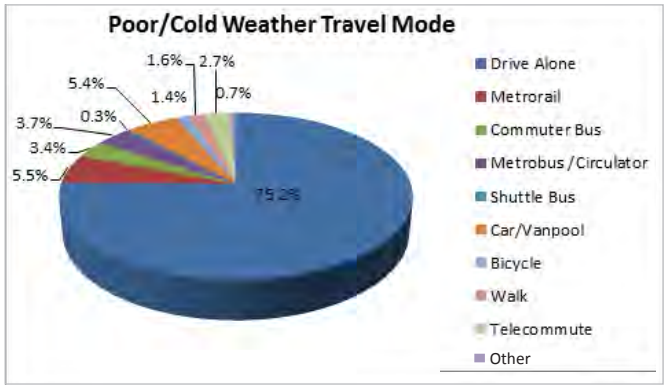


Figure 14: Poor Weather Travel Modes



[7] The one exception is the use of public bus; during poor weather there was a slight increase (0.1 percent) in this travel mode among survey respondents.

2.12.2 Travel Commuting Range

Respondents to the RTV transportation survey reported that they live in a wide range of zip codes radiating out in all directions from NRL. The commute distances for NRL survey respondents were determined based on the distance from the center of the respondent's home zip code to NRL; commute distances were then summarized by travel mode choice. Some workers live very close to NRL while others commute from over 60 miles away. As presented in Figure 15, the people taking commuter buses had the longest average daily commute distance at 40.3 miles. The next longest commute distance was for carpool/vanpool riders with an average 29.4-mile commute, followed by dedicated drivers with an average commute of 23.2 miles. Metrorail commuters had an average commute of 18.3 miles while commute distances for Metrobus/D.C. Circulator riders averaged 9.2 miles. Bicyclists reported a 12.0-mile average commute.

Home zip codes identified in the survey are distributed widely throughout the region and are concentrated in southwestern Maryland. Other than driving, the most viable commute travel modes are commuter bus and carpool/vanpool for areas most distant from NRL. Figure 16 illustrates the zip code distribution with the location of major roadways and Figure 17 depicts the zip code distribution with the location of certain transit lines (Metrorail, commuter rail, and commuter bus routes only).

As previously mentioned, home zip code data obtained from the transportation survey were used to estimate average commute distances and times. The average commute distance traveled by NRL survey respondents overall was 23.4 miles, while the average travel time with light traffic was 35.6 minutes.

2.12.3 Parking Breakdown

NRL currently contains 2,814 parking spaces (2,745 nominally available to employees) in surface lots, covered facilities, and on-street locations, and has approximately 4,872 employees. Thus the existing parking ratio for NRL is 1:1.77. Additional pressure for parking spaces sometimes exists because the installation has as many as 250 to 300 daily visitors and only 43 visitor spaces, many of which are use restricted.

There is currently no paid parking available near the installation and limited convenient on-street parking opportunities. Parking on the installation is by permit only and is categorized into four basic types: unrestricted, reserved, handicapped, and visitor. The unrestricted categories allow parking on a first come first served basis. Reserved and handicapped spaces are assigned parking with use restricted to the assigned employee. Presently there is no fee for parking on the installation. People receiving federal transit subsidies are not allowed to also receive parking privileges. While parking stickers are no longer used, all vehicles must be registered with Security.

Based on the results of the transportation survey, 91.4 percent of respondents park on the NRL installation and 1.0 percent park off of the facility, with 7.7 percent of respondents indicating that parking was not applicable. Approximately 79 percent of respondents reported that they use any available space; 11.6 percent responded that they park in executive spaces.

It should be noted that very few respondents (approximately 4) indicated that they pay for parking; perhaps those few responses are an indication of upstream parking at a Metro station or other facility.

Figure 15: Average Commuting Distance (Miles)

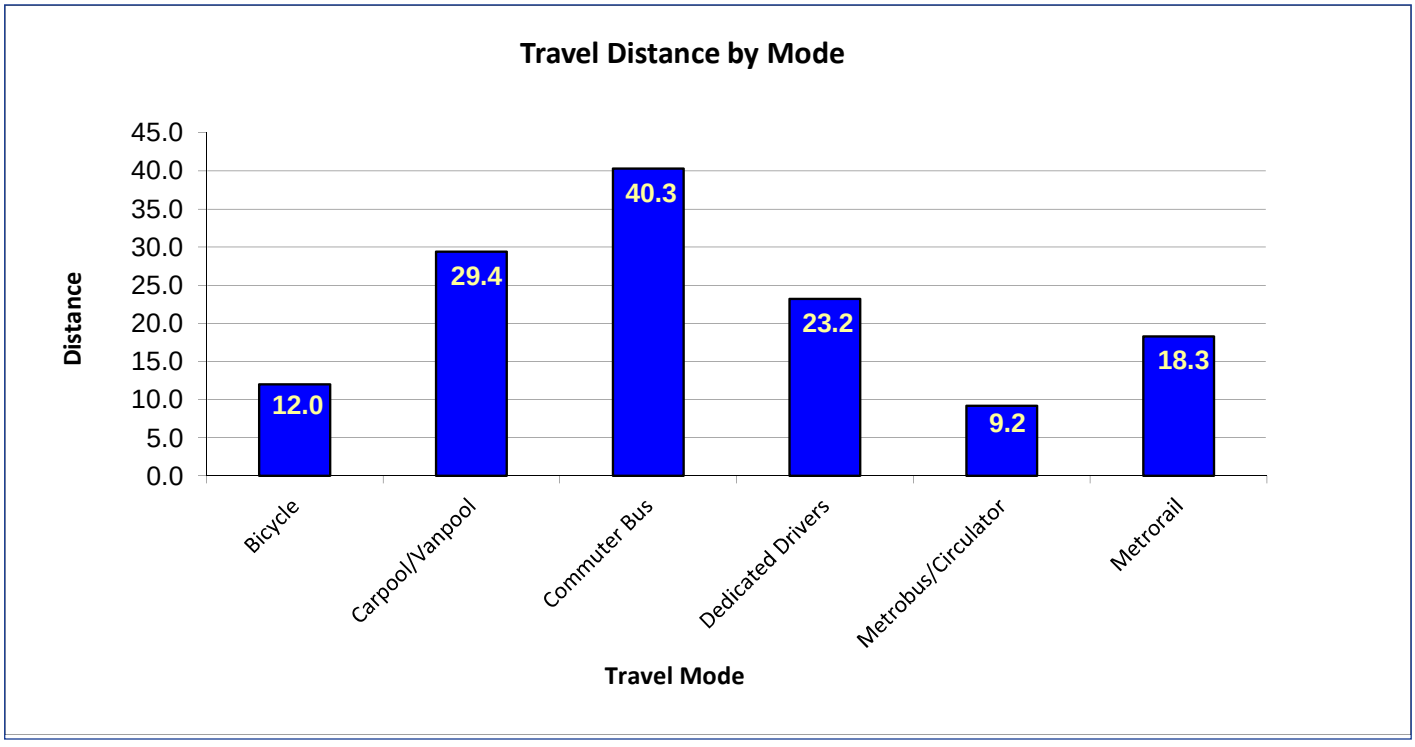
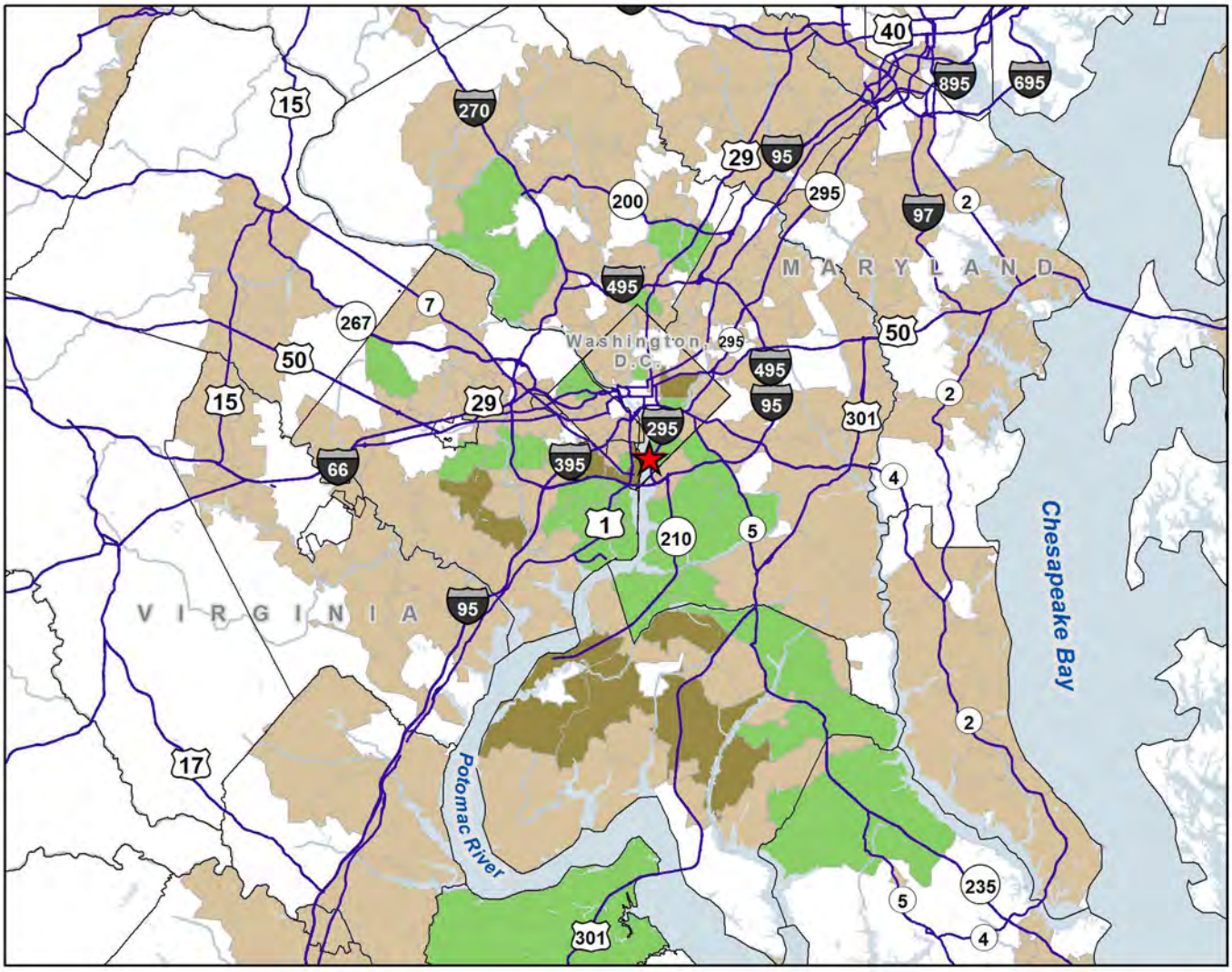


Figure 16: NRL Employee Home Zip Code Distribution



Employee Counts by Zipcode

Based on survey

- 1 - 5 Employees
- 6 - 10 Employees
- 11 - 21 Employees
- 0 Employees
- Naval Research Laboratory
- Roadway

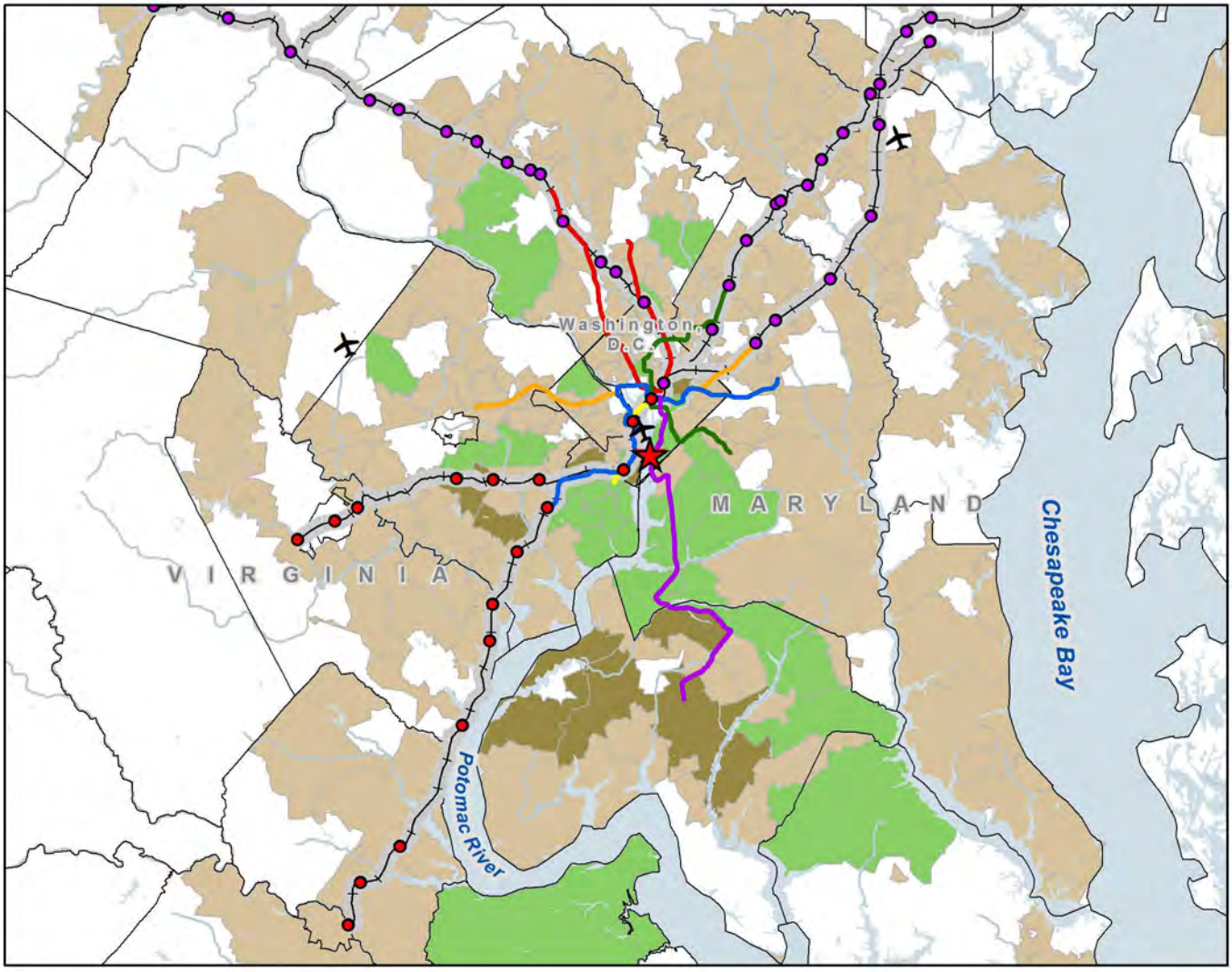
N

0 3.75 7.5 15

Miles

Sources:
Washington, D.C. OCTO/GIS, 2012
Naval District Washington, 2010

Figure 17: NRL Employee Home Zip Code Distribution with Transit



Employee Counts by Zipcode

Based on survey

- 1 - 5 Employees
- 6 - 10 Employees
- 11 - 21 Employees
- 0 Employees
- Naval Research Laboratory
- Marc Train Station
- VRE Train Station
- MTA Bus 907
- Commuter Rail
- Airport

Metro System

- Blue Line
- Green Line
- Orange Line
- Red Line
- Yellow Line

N

0 3.75 7.5 15
Miles

Sources:
Washington, D.C. OCTO/GIS, 2012
Naval District Washington, 2010

The majority of respondents that park at the installation reported that they have less than a three-minute walk from their usual parking space to their work location and nearly all have less than a 10-minute walk. The travel time from parking space to work location is broken down as: under three minutes for 87.6 percent of respondents, between three and five minutes for 9.4 percent, between five and 10 minutes for 2.5 percent, and greater than 10 minutes for 0.6 percent.

2.12.4 Entry and Exit Gates

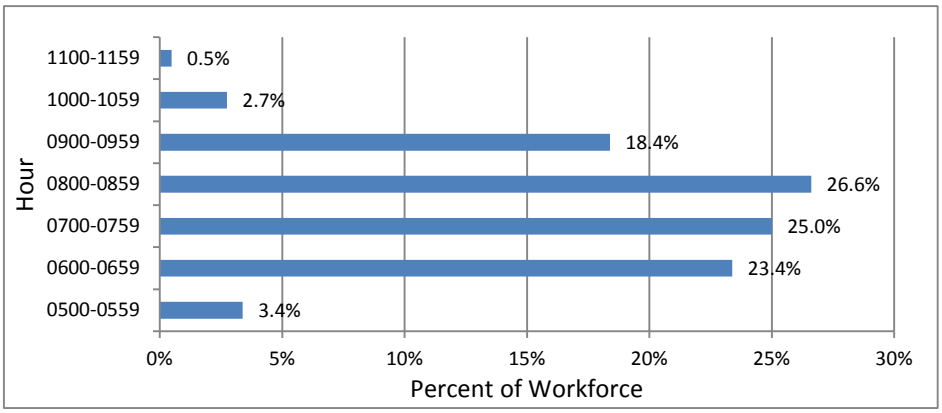
There is a single entry gate into the NRL facility for commuters. The gate is located at Overlook Avenue SW and Shepherds Parkway SW. All commuter traffic enters and exits this gate. Gate counts conducted in February 2011 indicate that 1,996 vehicles enter in the morning with vehicles entering the facility at a fairly steady rate between 0600 and 0930 (6:00 AM to 9:30 AM). The gate contains a fence and security booth where entry passes are checked. There are two lanes entering the facility; one from southbound Overlook Avenue SW and one from westbound Shepherds Parkway SW. There are two exiting lanes from the facility that allow for the following movements: eastbound to Shepherds Parkway SW/northbound to Overlook Avenue SE and southbound to Overlook Avenue SW.

2.12.5 Peak Commuting Times

The peak morning arrival time reported in the transportation survey was from 0600 - 0859 (6:00 AM to 8:59 AM) with 75 percent of the people responding to the survey arriving in that time period. As indicated in Figure 18, the single peak hour reported was 0800 - 0859 (8:00 AM to 8:59 AM) with 26.6 percent of the reported trips arriving in that single hour. The next highest arrival hour was 0700 - 0759 (7:00 AM to 7:59 AM) when 25.0 percent of the reporting workforce arrived, followed by 0600 - 0659 (6:00 AM to 6:59 AM) when 23.4 percent of the reporting workforce arrived.

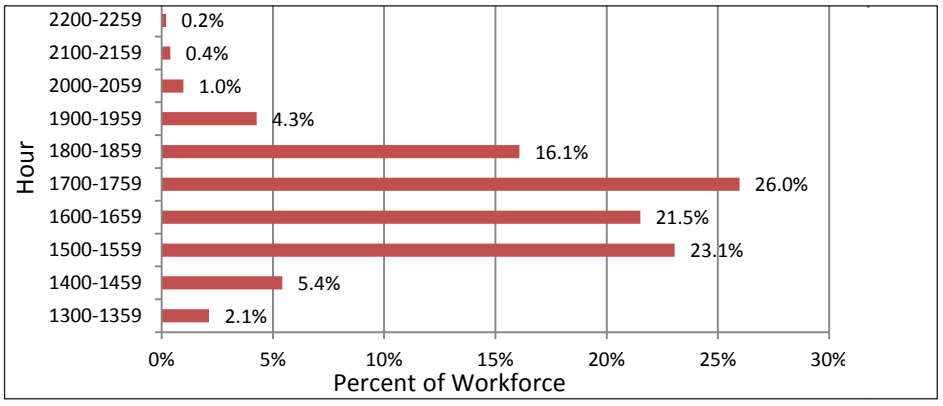
As often happens in employee travel, the morning arrival times at NRL are concentrated over fewer hours than the evening departure times. The peak 3-hour departing period was from 1500 - 1759 (3:00 PM to 5:59 PM) when 70.5 percent of survey respondents leave for the day. As depicted in Figure 19, the hourly period with the greatest number of employees departing NRL was 1700 - 1759 (5:00 PM to 5:59 PM) with 26.0 percent of the workforce departing, followed by 1500 - 1559 (3:00 PM to 3:59 PM) with 23.1 percent of the workforce departing, and 1600-1659 (4:00 PM to 4:59 PM) with 21.5 percent leaving.

Figure 18: Morning Arrival Times



Note: Data was collected prior to AWS being implemented

Figure 19: Evening Departure Times



Note: Data was collected prior to AWS being implemented

2.12.6 Employee Breakdown

There are currently approximately 4,872 employees at NRL. Based on the transportation survey the breakdown is: 98.6 percent civilian workers, 2.0 percent permanent contractors, 0.8 percent regular contractors, and 0.5 percent military personnel. In 2011, NRL management noted that the average age of staff was between 50 and 60 years. This average age during the time of survey data collection is unusually high for a Navy facility and as a result, the needs and attitudes of the workforce differ from many other facilities. Updated information from NRL staff indicates that the average age of the professional workforce at NRL in 2013 is now approximately 44 years.

2.12.7 Travel between Installations

Of people reporting on travel between naval installations, 72.4 percent stated that they did not travel between installations on an average weekly basis. The most common installations visited by NRL personnel on an average weekly basis were JBAB at 9.2 percent, Washington Navy Yard (WNY) at 6.9 percent, Naval Support Facility (NSF) Chesapeake Beach at 4.1 percent, Naval Air Station (NAS) Patuxent River and NSF Dahlgren at 1.8 percent each, and Carderock at 1.3 percent. No other facility was visited by more than 1.0 percent of respondents, and the Pentagon and the Office of Naval Research were visited by just under one percent (0.98 percent).

2.12.8 Use and Awareness of Guaranteed Ride Home and Transit Benefit Program

Employees were asked if they are aware of or utilize the Guaranteed Ride Home (GRH) program administered by MWCOG, and if they utilize or are aware of the Mass Transit Fringe Benefit Program available to federal and DoD personnel.[8] Based upon the results of the transportation survey, 55.7 percent of respondents are unaware of the GRH program and 39.9 percent are aware of the program but have not signed up. Additionally, 4.0 percent of respondents have signed up for the program and 0.5 percent have utilized the service.

In terms of the transit benefit program, 19.6 percent of survey respondents reported that they were unaware of the transit benefit programs despite regular advertisements of the transit benefit by the NRL Human Resources Office on its internal website, laboratory newsletter, and emails sent to all personnel. The majority of employees, 67.9 percent, indicated that they had chosen not to participate, perhaps due to the limited convenient transit options available at NRL. When respondents that drive alone to work are considered separately, 21.3 percent are unaware of the transit benefits programs. Almost 97 percent of overall respondents identified themselves as civilian federal employees (almost 98 percent of dedicated drivers). Of the survey respondents that participate in the transit benefits program, 2.6 percent reported that the benefits cover some of the commuting cost and 6.5 percent reported that the benefits off-set all of their commuting costs.[9]

2.12.9 Carpooling/Vanpooling or Reasons for not Carpooling/Vanpooling

According to the transportation survey results, 7.4 percent of NRL respondents currently participate in a carpool or vanpool for commuting to and from work. In terms of employees that do not carpool or vanpool, the reasons for not carpooling/vanpooling most often expressed were inconsistent work hours, 39.6 percent; prefer to commute alone, 18.7 percent; and outside obligations interfere, 16.1 percent. The "don't know how or where to apply" reason was expressed 5.7 percent of the time, while "used vehicle for work during the day" was expressed 4.3 percent of the time, and "tried to join but was unsuccessful" was indicated 4.1 percent of the time. All other categories were identified less than 4.0 percent of the time, including concerned about getting home in an emergency and prefer walking, biking, and transit.

2.12.10 Alternative Work Schedule, Telecommuting, and Flex Hours

Of the overall respondents to the transportation survey, 24.9 percent currently work an alternative work schedule (AWS) and 27.6 percent can work an alternative schedule but choose not to. Respondents who would like to work an alternative schedule but do not have the option to do so represent to 24.2 percent of the respondents, while 17.4 percent reported that their job duties do not allow for an AWS but would be interested in the option otherwise, and 5.9 percent do not have the option nor do they want it. In terms of the respondents that drive alone, 23.2 percent currently work an AWS, 26.8 percent can work an alternative schedule but choose not to, 22.2 percent would like to work an alternative schedule but do not have the option, 17.5 percent have job duties that are not suitable for an AWS but would otherwise be interested in the option, and 5.5 percent do not have or want the option. It should be noted that a formal alternative work schedule was implemented after the survey data was collected, but that some employees already took advantage of opportunities for "flex time" (typically a requirement to be at work during core mid-day hours with flexible arrival and departure times provided work hours are met). Also, NRL staff noted in 2013 that NRL participation in AWS is near 100 percent.

When queried about telecommuting, 22.4 percent of respondents reported that they currently telecommute for a portion of their work week, 38.1 percent have the option to telecommute and would like to start using the option, and 24.1 percent do not have the option to telecommute for a portion of their work week but would like to. Of the remaining respondents, 4.0 percent have the telecommute option available but choose not to utilize it, and 11.7 percent do not have or want the option to telecommute.

[8] As of January 2014, Federal and DoD employees are currently eligible to receive up to $130 per month in transit subsidies from the Mass Transportation Benefit Program (MTBP), which can be applied to offset employee commuting costs. The benefit was expanded to $230 as part of the American Reinvestment and Recovery Act in 2009, it was then reverted back to the original $125 per month allowance in January 2012, and in January 2013 the transit subsidy was raised to $245 for the duration of 2013.

[9] Note the MTBP benefit was $230 per month during the time period that the NDW Regional Transportation Survey was conducted.

Almost 21.2 percent of people that drive alone reported that they currently telecommute for a portion of their work week. Another 38.0 percent of drive alone respondents have telecommuting available and would like to start using that option, while 26.1 percent do not have it available but would like to telecommute for a portion of their week. Of the remaining drive alone population, 3.2 percent have the option available but do not wish to utilize it and 11.5 percent do not have a telecommute option but would not care to use it.

When asked about whether or not flex hours would be a benefit, 25.9 percent of respondents stated that they already work flex hours and 20.1 percent indicated that it would be a benefit. Another 9.5 percent indicated that they likely would benefit from flex time and an additional 17.3 percent stated that they possibly would benefit, while 13.1 percent reported that they would not likely benefit from flex hours and 14.1 percent stated that they would not benefit.

2.12.11 Bicycle Use

When asked about bicycle use, 9.5 percent stated that they would not use a bicycle to commute if amenities (e.g. showers, lockers) were provided, 20.8 percent said it would not be likely, and 8.4 percent stated that amenities were not the issue for them. Of the survey respondents, 14.5 percent said that they would bike to work with better amenities, 26.3 percent said it would be very likely, and 20.5 percent stated that they would possibly ride a bike to work if amenities were provided.

3.0 Area Planning Context

According to the 2008 TMP Handbook, single occupant vehicle travel, particularly during the morning and evening rush hour periods, will continue to be discouraged in the future because of its significant contribution to regional and local traffic congestion and poor regional air quality. By 2030, the population of the region is expected to increase by 40 percent while the workforce is expected to increase by 45 percent. It is anticipated that the majority of this growth will occur outside the Beltway, in areas with limited road capacities and public transportation services. It is projected that 92 percent of population growth is expected to be in suburban areas.[10]

As stated in the 2008 TMP Handbook, between 2000 and 2030 the number of trips made daily by Washington residents is expected to grow by more than 48 percent while the number of miles driven is projected to increase by more than 45 percent. At the same time, current regional long range transportation plan projects will only nominally increase the region's highway system capacity, with very little planned expansion of the transit system during the same period of time. Suburb-to-suburb travel is expected to account for 77.4 percent of daily trips in 2030, while future planned highway infrastructure is largely intended to improve mobility between suburban areas and downtown Washington, D.C. Inter-suburban travel more often than not entails SOV use, as fewer non-personal vehicle travel options are available in suburban areas.

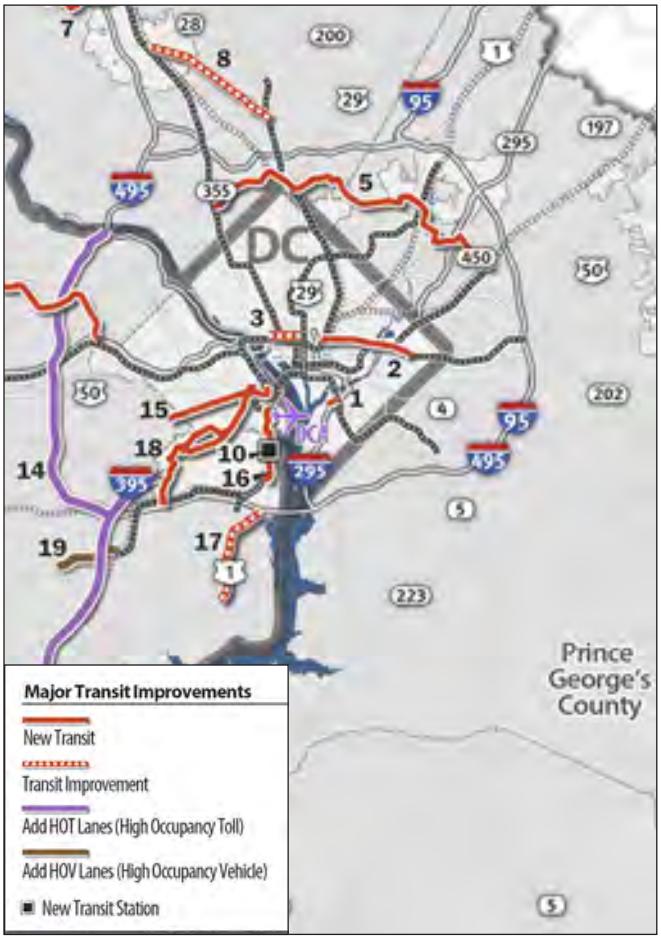
There are a number of large projects and planning initiatives located within the D.C. Ward 8 area, several of which promote higher density development in targeted areas proximate to NRL. Some of these projects are several miles from NRL, but each of these projects will have an impact on area traffic, mass transit, and pedestrian conditions (some for the better). Cumulatively, if all of these projects are developed, there could be a fair amount of new traffic on area roadways. Below are a description of the most relevant projects and their current status.

[11] Implementing a Successful TMP, May 2008, General Services Administration, Metropolitan Washington Council of Governments, National Capital Planning Commission

3.1 Regional HOV/HOT Lane and Transit Initiatives

The National Capital Region's Financially Constrained Long-Range Transportation Plan (CLRP) includes all "regionally significant" highway, transit and High-Occupancy Vehicle (HOV), bicycle and pedestrian projects, and studies that the area's Transportation Planning Board (TPB) realistically anticipates can be implemented by 2040. Some of these projects are scheduled for completion in the next few years; others will be completed much later. Each year the plan is updated to include new projects and programs, and analyzed to ensure that it meets federal requirements relating to air quality and funding. As can be seen in Figure 20 which shows the major transit improvements in the 2013 CLRP, few transit or non-SOV improvements are planned for the area around NRL. The proposed 2014 update to the CLRP does, however, include studies of managed (HOV/HOT) lanes on the 14th Street Bridge, I-395/I-695, and I-295 corridor. The I-295 section will be the third study of the three and likely reveal more details on the benefits, challenges, and impacts of converting these lanes to HOV then HOT.

Figure 20: Major Transit Improvements in the 2013 Constrained Long-Range Transportation Plan (CLRP)

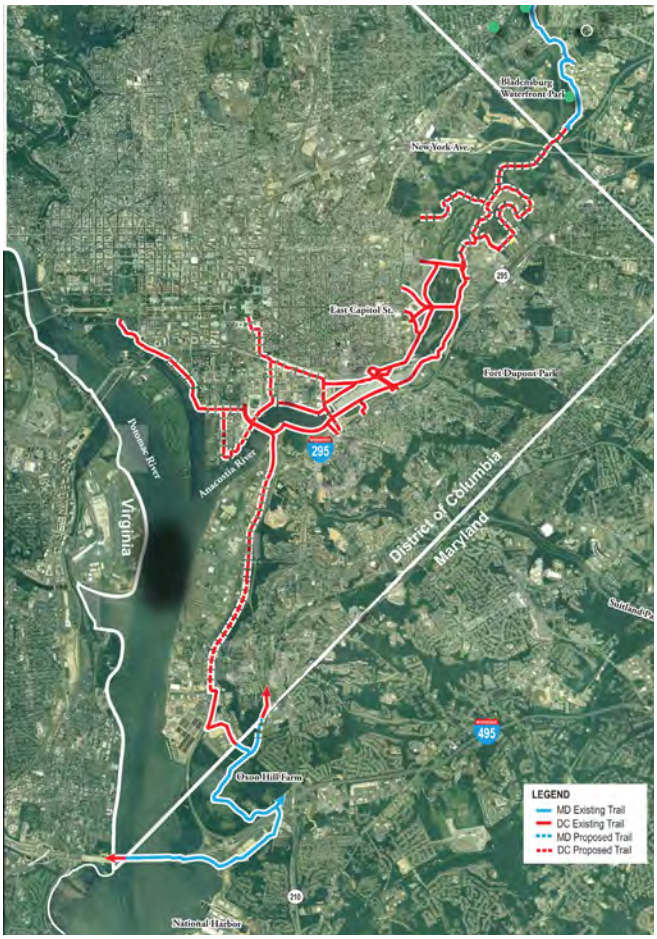


3.2 Anacostia Waterfront Initiative

One of the most ambitious development plans in the history of the District, the Anacostia Waterfront Initiative (AWI) pledges to restore and revitalize the Anacostia River. Organized according to five themes, the AWI Framework Plan guides the revitalization of Washington, D.C.'s waterfront from the Washington Channel to the Kenilworth Aquatic Garden, and identifies vibrant places for people to live, work, and play.

The Anacostia Riverwalk, a planned 20-mile multi-use trail along the east and west riverbanks, is the AWI element with the greatest potential to affect NRL. The vision of a continuous Riverwalk is a key component of the AWI Framework Plan, facilitating several goals such as enhancing parkland, improving water quality, and increasing access to waterfront destinations. A section of the planned Riverwalk, the proposed South Capitol Street Trail, would parallel the eastern boundary of NRL and is scheduled to be started in Spring 2015 (Figure 21). The AWI will facilitate bike use as an alternative transportation mode and could reduce the number of vehicles traveling on area roads.

Figure 21: Anacostia Riverwalk Trail System

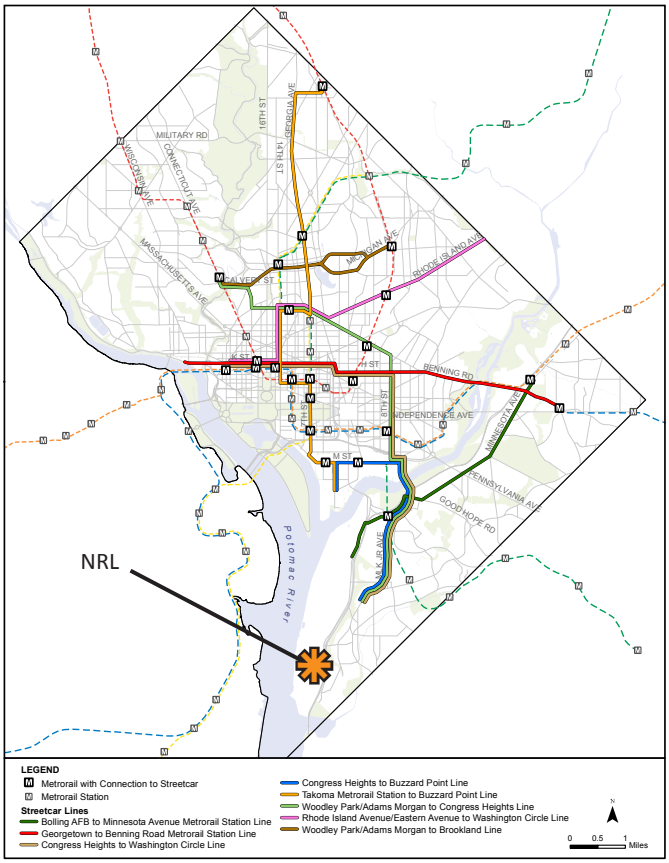


3.3 D.C. Department of Transportation Streetcar Project

The Streetcar plan recommended by the D.C. Department of Transportation (DDOT) includes the addition of streetcar service to the multi-modal transportation network serving the District of Columbia. When operational, the streetcar system would consist of small rail cars that operate along grade level tracks in the streetbed that would mix with vehicular traffic or in some instances would utilize exclusive right-of-way where it is available. The planned streetcar vehicles would accommodate up to 168 seated and standing passengers. Streetcar stops would be located about every ¼ mile to ½ mile along the routes. Stops will include a passenger sheltered waiting area and system information regarding fares, routes, and schedules. The streetcar system is planned to operate seven days per week with service frequencies of approximately 10 minutes throughout the day and evening, and including late night service on weekends. For segments of the system that accommodate multiple lines, service is expected to be more frequent along these trunk lines. At this juncture the Streetcar Project is not fully funded and its implementation schedule is uncertain.

Several streetcar lines are planned to extend from different areas in the District to as far south as the Congress Heights neighborhood one to two miles north of NRL (Figure 22). While the current proposed lines do not extend as far south as NRL, extension of any of these lines further south in the long-term future could possibly bring service within walking distance of NRL.

Figure 22: D.C. Streetcar Plan



3.4 Metro Express

The Metro Express bus service currently offers limited-stop bus service along several corridors with plans to add additional corridors. Metro Express service consists of limited-stop bus service in designated high-ridership stops that are ¼ to ½ mile or more apart. The service is frequent and offers better travel times than the regular Metrobus local service, because it makes significantly fewer stops. The routes will also incorporate other features to help reduce travel times for passengers, including signal priority for transit at intersections and special lanes to bypass congested roadway segments where possible. The Metro Express limited-stop bus element of the plan envisions the implementation of Metro Express limited-stop service in 13 corridors. Some of the initial Metro Express limited-stop bus corridors have been designated as future streetcar corridors. In these corridors the Metro Express limited-stop bus service would likely precede streetcar service in the short term. As streetcar service is introduced in these particular corridors, the Metro Express limited-stop bus service will be optimized so that the bus and streetcar lines provide complementary services. Under this arrangement Metro Express will serve longer corridor trips than the streetcar service, with stops that are further spaced apart. The South Capitol Street/Martin Luther King, Jr. Avenue/Minnesota Avenue Corridor line will be the closest Metro Express bus line to NRL but the alignment and stops will be over 1/2 mile from installation without a clear or direct pedestrian connection to NRL.

3.5 The South Capitol Street Project

The improvements proposed to South Capitol Street by the District Department of Transportation (DDOT) would change South Capitol Street from an expressway to an urban boulevard and replace the deteriorating bridge, also known as the Frederick Douglass Memorial Bridge. The project is expected to also increase pedestrian mobility and safety, improve multi-modal transportation options, increase community accessibility, and support economic development on both sides of the Anacostia River. The creation of new transit stops and pedestrian facilities along South Capitol Street and Suitland Parkway will create new opportunities for movement throughout the corridor.

This $905 Million project includes not only replacement of the bridge itself, but also improvements on either side including a new traffic oval west of the river and a new at-grade traffic circle east of the river that will connect South Capitol Street, Suitland Parkway, and Howard Road SE. Other elements of this project include reconstructing the Suitland Parkway/I-295 interchange, constructing a new Martin Luther King Jr. Avenue and Suitland Parkway interchange, and increasing bicycle and pedestrian facilities.

3.6 Commuter Ferry Service

The Prince William County Transportation Planning Division is in the process of studying the feasibility of a commuter ferry to service points along the Potomac River from Prince William County, Virginia to Washington, D.C. and other locations. The ferry would include stops as far north as the Navy Yard/Nationals Pier. The study is an extension of a 1999/2000 Virginia Department of Transportation (VDOT) study of passenger ferries. Test runs were conducted in May 2009 and according to the Final Report, a commuter ferry service is a viable option but will undergo closer study in terms of market viability for certain stops. There may be an opportunity for NRL, JBAB, and the WNY to benefit from the establishment of the service should the commuter ferry project find these locations as viable.

The Potomac Riverboat Company also offers commuter ferry service in Maryland and Virginia and has plans to expand service.

3.7 Saint Elizabeth's Redevelopment

The St. Elizabeths campus, located roughly 2 miles northeast of NRL in the Congress Heights neighborhood, is the most suitable site within the District to meet Department of Homeland Security's (DHS) minimum headquarters consolidation requirements. The Final Master Plan provides the development framework for accommodating 4.5 million gross square feet of office space for the DHS headquarters on both the St. Elizabeths West and East campuses. The Final Master Plan outlines 3.8 million gross square feet of office space on the West Campus and 750,000 gross square feet of office space on a portion of the East Campus (identified as East Campus, North Campus Parcel). The development will be consistent with a DHS Interagency Security Committee (ISC) Level V campus to house mission-critical federal agencies. GSA has proposed a three phased-development strategy to accommodate multiple Government agency headquarters, including 14,000 DHS employees (10,900 on the West Campus and 3,100 on the north parcel of the East Campus).

In addition to the DHS development on the East Campus, the D.C. Office of Planning has prepared a master plan for St. Elizabeths East Campus in preparation for redevelopment. The vision is to create a mixed-use center for innovation that leverages the $3.4 billion federal investment in the DHS consolidation on the West Campus and connect existing residents to economic opportunity. Full redevelopment of the East Campus into a well-planned, mixed-use community is expected to take up to 30 years to complete and will occur in multiple phases.

Phase I Development - The first stage of development at St. Elizabeths is the construction of the U.S. Coast Guard (USCG) Headquarters at the southeast corner of the West Campus. When complete in 2013, it will feature an 11-story office building for 3,860 employees and two seven story parking garages.

The major expected impact resulting from the DHS relocation and consolidation at St. Elizabeths will be on the existing transportation network. Various public and controlled access transportation improvements are planned to support redevelopment of the St. Elizabeths Campuses by DHS. Critical improvements to the road network include:

- The modification of I-295/Malcolm X Interchange outside JBAB, just north of NRL,
- The addition of an access road on the western portion of the West Campus property to provide access to the new USCG Headquarters, and
- The widening of Martin Luther King, Jr. Avenue SE.

DHS is also negotiating with WMATA to extend some existing Metrobus routes to run between St. Elizabeths and the Anacostia Metro Station in order to facilitate the use of public transportation.

Overall, the proposed St. Elizabeths redevelopment could increase the residential and employee populations in areas proximate to NRL. However, it would also introduce new and improved transit, retail, and food services in areas where such amenities are currently lacking.

3.8 Barry Farm

The District, in collaboration with the residents of the Barry Farm community, has started a process to revitalize a public housing site in Ward 8's historic Anacostia area. The Barry Farm community is approximately 5 miles north and west of NRL. In December 2006, the District Council approved the Barry Farm/Park Chester/Wade Road Community Revitalization Plan with a goal to redevelop the existing public housing development into a mixed-income, mixed-use community where residents will have access to housing options affordable at all income levels. The Barry Farm proposal is part of the District's New Communities Initiative (NCI); a comprehensive public-private partnership focused on redeveloping several key areas of D.C. The Barry Farm area is generally bound by Suitland Parkway to the north, Martin Luther King Jr. Avenue to the east, Firth Sterling Avenue to the west, and Saint Elizabeth's West Campus to the south. The overall planned development program includes: 1,341 market rate residential units, 432 affordable residential units, 144,244 gross square feet of retail, and will cost $550 million is several separate projects (including Sheridan Station and Matthew's Memorial Terrace).[11]

The proposal includes a new pedestrian bridge to link the residential neighborhood to the Anacostia Metro Station, as well as a new Recreation Center with an indoor gymnasium, new pool, multi-purpose field, basketball courts and bleachers, and playground. The project would adaptively re-use the old Birney Elementary school as the recreation center for the residents of Barry Farm and the Ward 8 neighborhood. Financial planning, employment training, credit repair, and homeownership programs would be offered to current residents.

3.9 Poplar Point

Poplar Point is envisioned to be the home of a variety of different uses including residential, retail, office, entertainment, cultural, and park/open space uses. The 110-acre site is being transferred to the District of Columbia from the federal government. The site is bounded by South Capitol Street, I-295, and the 11th Street Bridges; the site is largely unused, but contains some National Park Service and the U.S. Park Police facilities.

The Poplar Point site is approximately 6 miles from NRL. Currently, the project in undergoing a federal environmental impact analysis and Small Area Planning phase. Currently, there are no specific figures for the actual allotment of space for the different uses. These figures will be determined during the Small Area Planning process.

[11] http://dcbiz.dc.gov/DC/DMPED/Projects/Development+Projects/Barry+Farm

3.10 Congress Heights Neighborhood Investment Fund

A Neighborhood Investment Fund (NIF) is an annual non-lapsing, revolving fund that is utilized to finance economic development and neighborhood revitalization in 12 target neighborhoods. Congress Heights is a neighborhood found within Ward 8 whose boundaries are generally defined by Mississippi Avenue SE to the southeast, Wheeler Road SE to the east, Alabama Avenue SE to the north, and Martin Luther King Jr. Avenue and South Capitol Street to the northwest. The Fund was designed to provide a pool of resources to support investment and revitalization in emerging and distressed neighborhoods.[12] The NIF is envisioned as an economic development mechanism that can assist in achieving a significant and visible impact in its target neighborhoods. The target area investment plan is designed to identify community priorities for NIF investments and to set an investment agenda for NIF resources over a five year period.

Congress Heights has seen a fair amount of new projects recently including the Shops at Park Village, Garfield Heights Apartments, Hope Apartments, Town Hall Education, Arts Recreation Campus, and the Boys and Girls Club football field.

3.11 Great Streets Initiative

The Great Streets Initiative is a multi-year, multiple-agency effort to transform nine under-invested D.C. roadway corridors into thriving and inviting neighborhood centers using public actions and tools (such as tax incentives) to encourage private investment. These corridors carry a potential to be "great streets" that link D.C. neighborhoods. The D.C. Office of the Deputy Mayor for Planning and Economic Development is partnering with the DDOT and the D.C. Office of Planning (DCOP) to manage the program. More than $200 million is being invested in new mixed use development projects, storefront improvements, transportation, streetscape, and transit improvements along these corridors. As the initiative nearest the NRL, Martin Luther King Jr. Avenue SE and South Capitol Street Great Streets Initiative is an effort to transform this corridor into a thriving and inviting neighborhood center using public actions and tools as needed to leverage private investment.

3.12 Bellevue: Embracing the Revitalization

In 2009 DCOP developed Bellevue: Embracing the Revitalization, the small area plan for the Bellevue neighborhood in Ward 8 that lies east of NRL. The plan establishes a framework guiding redevelopment in Bellevue and identifies three underutilized sites that have the potential to stimulate further revitalization.

Additionally, Bellevue is one of the twelve targeted neighborhoods included in the NIF Program. As previously discussed, projects in the targeted neighborhoods are eligible for city funds if they meet the goals outlined in each neighborhood's respective NIF plan. Implementation of this small area plan could introduce additional residents, employees, traffic, and services in the vicinity of NRL.

[12] Neighborhood Investment Fund, Government of the District of Columbia, Office of the Deputy Mayor Planning and Economic Development, 2008

4.0 Existing Transportation Management Program Measures

4.1 Employee Transportation Coordinator

A Regional Employee Transportation Coordinator (ETC) has recently been appointed for NDW. Installation-specific ETCs will be determined soon. The ETC at federal installations in the NCPC region plans, implements, and refines the TMP over time and is also responsible for "marketing" the plan at the installation to ensure its success.[13] This function is generally provided by management and/or planning personnel.

4.2 Parking Supply and Control

There are currently 2,814 parking spaces in surface lots, covered facilities, and on-street within NRL for approximately 4,872 employees, with 2,745 spaces nominally available to employees for commuter parking - including reserved and handicapped spaces. Parking is free of charge and allowed by permit only with parking in unrestricted spaces at the facility being occupied largely on an ad hoc basis, and parking in restricted spaces (reserved and handicapped) limited in use to only the assigned employee. Most employees are able to park a short distance from their work location. During a survey of the midday period in February 2011, reserved parking was 62 percent occupied and unrestricted parking was 74 percent occupied for an overall parking occupancy of 73 percent at NRL.

4.3 Transit Subsidies

Department of Defense employees are eligible to receive up to $130 per month in transit subsidies from the NCR Mass Transportation Benefit Program (MTBP) that can be applied to offset commuting costs.[14] The civilian federal workforce that comprises the vast majority of the NRL worker population (96.8 percent of transportation survey respondents) is entitled to participate in the Federal Government Smart Benefits Program, including SmartBenefit subsidies available to employees within the NCR. The subsidy can be utilized to pay travel costs on Metrobus, Metrorail, the D.C. Circulator bus, commuter buses, commuter rail, and vanpools. The subsidy cannot be used for parking fees at mass transit locations. Incentives for transit usage are emphasized both by the Transportation Management Program Handbook and the Transportation Element of the *Comprehensive Plan for the National Capital*. Transportation survey results suggest that the majority of the NRL workforce chooses not to participate in the program, perhaps due to the limited convenient transit options available at NRL. Approximately one-fifth of NRL employees may not be aware of the benefits despite regular advertisement by the NRL Human Resource Office (also see Section 2.12.8).

4.4 Telecommuting

Federal policies allow employees the option of "Working-From-Home," at "Satellite Work Centers," and at "Neighborhood Work Centers." The Telework Enhancement Act of 2010 calls for at least 20 percent of the hours worked in every two administrative weeks by federal employees to be on a telework basis. Discussions with planning staff at NRL indicate that the nature of much of the work conducted at NRL – scientific laboratory work, research and development, test and evaluation engineering – precludes the ability to telework to a large degree. A typical allowance for teleworking at Navy facilities is one day during every two work weeks. Responses to the telecommuting question in the transportation survey indicated that 22.2 percent currently telecommute a portion of their work week and an additional 38.1 percent have telecommuting available and would like to start using the option, while 24.1 percent do not have it available but would like to telecommute a portion of their work week.

4.5 Shuttle Bus Service

There is currently no shuttle service from NRL to locations outside the facility. An internal shuttle bus service is available that transports employees around the facility. This internal NRL shuttle bus operates Monday through Friday every 15 minutes during morning commute, lunch time, and evening commute hours (6:00 AM to 8:30 AM, 11:00 AM to 1:00 PM, and 2:30 PM to 5:00 PM). The shuttle bus stops as necessary along the route to pick-up or discharge passengers, with dedicated stops at Building 106 at the Main Gate (start of route) and Building 222 (five minutes after leaving Building 106) (see Figure 05 in Section 2.4).

4.6 Ridesharing

Ridesharing is defined as two or more persons traveling together in an automobile or van. Ridesharing benefits include fuel cost savings, reduced wear and tear on roads, reduced traffic congestion, improved HOV lane utilization, reduced pollution and greenhouse gas emissions, and overall cost savings associated with less driving. The wide range of benefits of ridesharing make it an important transportation demand management strategy.

Ridesharing services enable commuters to find other individuals who share similar commute routes and work hours.[15] There are a number of carpool or vanpool websites that currently connect people that would like to join a rideshare program. MWCOG offers ridesharing programs and has a specific program set-up for federal employees. GWRideConnect connects people looking to rideshare from suburban Virginia to Washington, D.C. According to statistics provided by GWRideConnect,[16] there are currently 7 vanpools that serve commuters at NRL. Other regional vanpool provider websites include eRideshare, Vanpools.net, Commuter Solution (Howard County, MD), Carpool World, and Patriotic Advantures.

[13] Implementing a Successful TMP, May 2008, General Services Administration, the Metropolitan Washington Council of Governments, National Capital Planning Commission

[14] Note the MTBP benefit was $230 per month during the time period that the NDW Regional Transportation Survey was conducted. The MTBP benefit was expanded to $230 as part of the American Reinvestment and Recovery Act in 2009; however, it was reverted back to the original $125 per month allowance in January 2012. The benefit was then temporarily raised again to $245 for the duration of 2013 only as part of the American Taxpayer Relief Act of 2012 (H.R.8).

[15] http://www.mwcog.org/commuter2/commuter/ridesharing/index.html

[16] Personal communication with Diana Utz, GWRideShare Connect and Carol Truppi PBS&J, 2/16/11.

4.7 Bicycle Facilities

In the past NRL had a fleet of bicycles that employees utilized for intra-base travels, a few of which are reportedly still in existence and occasionally used.[17] NRL does not provide modern bicycle storage facilities, aside from the occasional bike rack associated with the old bicycle fleet. Bicycle amenities, such as showers and lockers proximate to work areas, are not available at NRL.

4.8 Variable Work Schedules

This measure falls under the federal government's "Alternative Work Arrangements," which allow the scheduling of work hours outside the traditional 9:00 AM to 5:00 PM, 5-day work week pattern. Given the nature of the research that occurs at NRL, the research employees often work non-traditional hours and work weeks. The results of the transportation survey indicate that a quarter of NRL employees currently work an alternate work schedule (AWS) and just over one quarter stated that they can use an alternative work schedule, but choose not to. Of the total responding, approximately 41 percent of employees would like to work an alternative schedule but are unable to due to various reasons.

4.9 Guaranteed Ride Home

Guaranteed Ride Home (GRH) services are implemented in support of ridesharing and parking management programs. It is important to have these services available so that when employees work late or need to leave the base they are comfortable in not having their own vehicle available at work. Without the comfort of such services, employees who may desire to rideshare, use transit, bike, or walk may not do so. MWCOG makes the GRH program available to public and private employees within the National Capital Region. GRH provides commuters who regularly (twice per week minimum) carpool, vanpool, bike, walk, or take transit to work with a free ride home for unexpected emergencies. Commuters may take advantage of GRH up to four times per year. GRH can also be used for unscheduled overtime when your employer mandates that you must stay late. GRH is designed to "rescue" commuters who are worried about how they will get home when an emergency arises. Knowing there is a guaranteed ride home allows one to use commuting options like transit and carpools with peace of mind and confidence.[18]

There is currently no formal centralized service or information repository regarding GRH at NRL. The results of the transportation survey indicate that many people are unaware of the GRH program and far fewer are actually registered with MWCOG, and only a few employees have utilized this service.

4.10 Other Vehicle Travel

There are various other activities associated with the base that require use of a vehicle. For example, employees often travel between bases to do their jobs. According to the NRL transportation survey results, almost 28 percent of respondents travel to another installation in the region at least once per week. While there are government vans available, many of these trips utilize a private or government car with one or two passengers. Additionally, 3.9 percent of survey respondents stated that they do not carpool since they need a vehicle for travel during the work day; suggesting that the provision of vehicles at NRL for inter-base employee travel could reduce the number of people driving to work on a daily basis.

High quality video conferencing and training can substitute for in-person meetings at other installations, thereby reducing workday travel. NRL has invested in video conference capabilities and makes extensive use of this technology, thereby already reducing installation trips. Further use and communication of this service could reduce the need for SOV travel.

NRL is the Navy's premier research and development facility with various needs for goods and services. A count performed at the NRL entrance gate on February 16, 2011 indicated that there were 35 trucks entering the facility during the morning survey period (5:30 AM to 9:30 AM). Additionally, 3 transit vehicles (vehicles whose sole purpose appeared to be transporting people – taxi, bus, van, etc.) entered NRL during this period. Other vehicles such as police cars, maintenance vehicles, and the like also travel within the installation on a daily basis.

[17] During site reconnaissance in January 2011 one covered bike rack, assumed to be an artifact associated with the historic bike fleet, was observed south of Building 125 with two bicycles attached.

[18] http://www.mwcog.org/commuter2/commuter/grh/index.html

5.0 Master Plan Land Use Proposals: Transportation Implications

5.1 Anticipated Land Use Changes

The facilities within the Research, Development, Testing, and Evaluation (RDT&E) land use will undergo the most change in the near-term with several facility demolitions, renovations, and new construction projects proposed. A Combined Generation Plant will also be constructed to house a combustion-powered turbine for electricity production; no land use changes will result from this project. All other land uses on NRL will remain the same and are not impacted by the near-term projects. Over the next five years, there will be a renovation of 112,688 square feet (sf), new construction of 111,112 sf, and demolition of 131,673 sf; in total approximately 350,000 sf of facilities will be altered on NRL.

5.2 Employee Density Implications

Minimal population density changes will occur as a result of the internal division movements to renovated or newly constructed facilities on NRL described in the NRL Corporate Facilities Investment Plan II (CFIP II). Since most divisions of the research laboratory are moving from one existing facility to another, the population disbursement will remain fairly stable. With the consolidation of demolished facilities from the south section into new facilities in the Building A59 addition, the western edge of the installation may become denser and the southern edge may experience a decrease in density.

Currently NRL has 4,872 employees. Near- and long-term employee growth is expected to be minimal at NRL. With a projected 2 percent annual employee growth, the NRL workforce will increase by 615 personnel to 5,487 in five years.

5.3 Trip Generation / Modal Split Impacts

With a slight increase in population over the next five years, there is a possibility for a slight increase in trip generation. New employee trips to the installation will likely be in the form of SOV travel in the interim due to the limited transit services that directly serve NRL and the remaining employee parking capacity available in several areas of the installation. If the new employees continue to enter/exit over a large window of time in the morning/evening as the existing employees do, the impact to traffic both on and off the installation will be spread out and very minimal.

Additionally, based on the experience of other large employers, it is likely that employee trips will increasingly be off-set or reduced by promoting teleworking opportunities, encouraging carpooling and vanpooling with the conversion of existing employee parking to carpool/vanpool only parking, and implementation of the TMP measures outlined in this report. Additionally, it is expected that the mode of travel to and from the campus would move away from the single occupant vehicle in the future due to the future reduction in parking spaces as a result of planned renovations and projects.

5.4 Master Plan Parking Supply Impacts

No parking spaces are currently planned to be added during the timeframe of the Master Plan. Furthermore, programmed projects that are occurring within the five year time period of the TMP will remove 160 parking spaces. These programmed projects include:

- Project P-041: Demolition of eight buildings (33, 34A, 35, 53, 55, 68, 69, 125), and consolidation of their functions into the new addition on the west side of building A59. This project will reduce parking by approximately 90 parking spaces.
- Project P-275: Renovation of Buildings 65/75 for the Electronics Science & Technology Division. This project will reduce parking by approximately 50 spaces.
- Project R-04: Renovation of the south facade of Building 97 and removal of hazardous materials. Parking will be reduced by approximately 20 spaces due to Anti-Terrorism/Force Protection requirements.

Refer to Figure 23 for the locations of the buildings referenced and Section 7.1 for more on NRL's parking compliance with NCPC policy.

5.5 Multi-modal Provisions

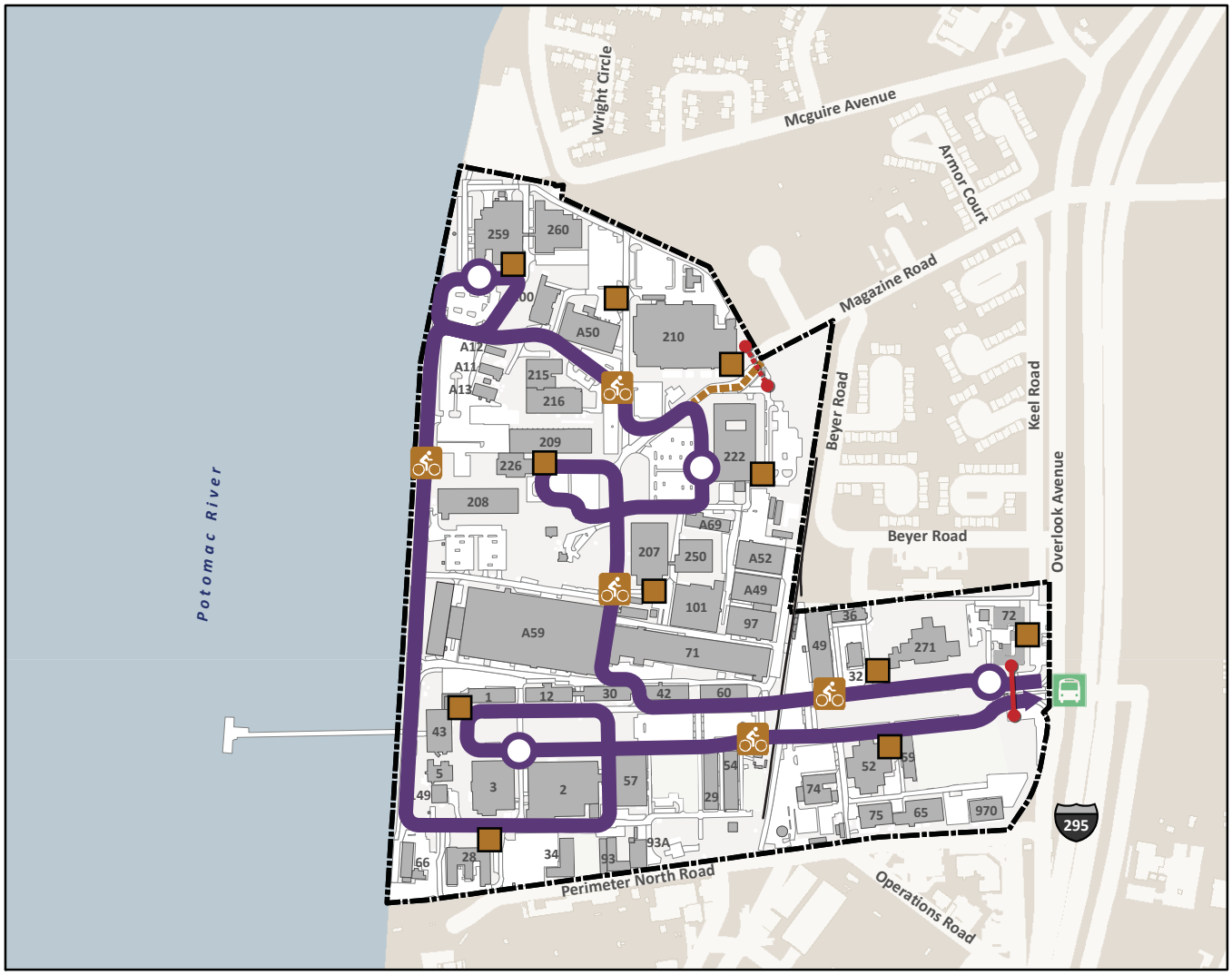
The multi-modal transit strategies identified in the Master Plan and incorporated into this TMP indicate how various types of shuttle, bike, and other public oriented transit services can be incorporated throughout the installation. The ultimate goal is to build upon existing network systems to better link and overlap pedestrian/transit corridors to ensure an efficient and reliable alternative to the car. These transit and circulation strategies include the following and are illustrated in Figure 23:

- Continue to circulate the internal shuttle service through the installation along a designated route. The shuttle service will stop as necessary along the route to pick-up or discharge passengers as necessary. The stops shown are notional.
- Develop external shuttle services to provide regular connections between other DoD installations and the Pentagon.
- Expand bicycle access to include designated routes, signage, secure and sheltered bicycle storage; bike racks in proximity to major employment centers; and shower/locker rooms in work facilities. Bike amenities should be easily accessible to/from either the road network which connects to the regional bike route network or multi-modal trails. The Magazine Road Gate could be re-opened to accept bicyclists and pedestrians if funding and staffing can be acquired.
- Create a wayfinding system that identifies and encourages use of public transit.
- Align pedestrian corridors with multi-modal circulation.
- Install bikeshare stations at entrance gates and key facilities.

In addition to these multi-modal strategies, the Master Plan also recommends the following strategies:

- Maintain the two primary circulation loops.
- Improve the traffic signs and markings on Van Kuren Avenue and Magazine Road to reduce conflicts between pedestrians and vehicles.
- Strive to limit the increase of parking spaces, which will help to shift the parking ratio towards NCPC mandates.

Figure 23: NRL Multi-modal Strategies



- Proposed Internal Shuttle Route & Stops
- Operational Gates
- Future Gate (pending funding)
- Public Transit
- Bicycle Routes
- Future Bicycle Route (pending gate opening)
- Bicycle Storage / Bikeshare Station

N

0 200 400 800
Feet

Sources:
Washington, D.C. Department of Transportation, 2010
Washington, D.C. OCTO/GIS, 2006
ESRI - Streetmap USA, 2007
NRL PWD, 2011
Naval District Washington, 2010

The northern extent of the installation boundary, as shown on this map, is approximate and is not suitable for legal, engineering, or surveying use.

6.0 Proposed Transportation Management Program

There is no single transportation management measure that can significantly lessen the use of SOVs at NRL. However, as detailed below there are a series of measures that can be implemented to have a positive effect in reducing the dependence on SOVs as the primary travel mode of NRL commuters. Table 06 on the following pages provides a summary of the mode split goals and primary strategies NDW on behalf of NRL will seek to implement to achieve the goals and objectives of this TMP. The strategies in the table are expanded upon in the text of this chapter with additional measures that are tailored to support NRL in achieving a reduction in SOV trips and other TMP objectives. Some of these measures offer good potential to change employee travel behavior and some offer more modest improvements, but applied together they offer an opportunity to cause a shift in travel mode and a concomitant reduction in the long-term need for parking. Since fewer drivers are anticipated overall due to the transportation management measures discussed below, the relative contribution from NRL to intersection capacity in the area will also be reduced.

The multifaceted approach is especially necessary in a location such as NRL where the workforce is scattered throughout the region at varying distances from the installation and where there are fairly limited travel modes available or preferable at the different locations and distances from the installation. Incentivizing and providing support for ridesharing should have the best chance of creating a travel mode shift away from use of SOVs in areas that have no convenient mass transit service and are distant from the site. People who live near convenient mass transit but still drive would likely be more incentivized by mass transit subsidies and providing convenient shuttle service to/from nearby Metro stations (if funding is available).

The conclusions reached on potential reduction of SOV use that this TMP could provide were selected from those found in the RTV "Tool Box" and were developed based on transportation survey responses, gate counts and vehicle classification counts, previous studies and surveys at NRL and elsewhere, and published literature. There are gaps in available data (i.e., employee residence zip code data are not available installation-wide due to multiple tenants/stakeholders), thus certain assumptions, projections, or inferences needed to be made to reach conclusions and offer recommendations. The success of the TMP depends on numerous factors; to ensure the continued success of the program will require the TMP to be reviewed and adjusted over time as more information becomes available or things change.

The recommendations contained herein also do not consider the cost of implementation and maintenance and potential availability of funding sources. Clearly those considerations would affect the ability to implement many of the measures presented in this section.

6.1 Employee Transportation Coordinator

A Regional ETC (RETC) has recently been appointed for NDW under the recent RTV effort, and installation specific ETCs will be determined soon. Establishing an ETC at the NRL facility is recommended but the viability remains to be determined as NAVFAC is still looking into the possibility. Given the population size of NRL compared to larger installations, it is recommended that the same ETC be designated for several installations in order to provide a higher return on investment.

It is imperative that this function be centralized with one person installation-wide serving as the ETC to implement an effective transportation management program. Once appointed, the ETC will need to be empowered to develop and implement an integrated program based on the information found in this TMP and the RTV. It is also recommended that the facility ETC have the backing of installation leadership and be located appropriately in order to have influence over individual commands or tenants located on the installation; such a position will enable the ETC to be effective at implementing the TMP. The ETC will also serve as an advocate for transportation management programs at the NRL, a liaison with outside transportation interests, the key on-site resource for transportation management information and strategies, and the chief marketer or promoter of the NRL transportation management program and use of transportation alternatives by the workforce.

The ETC will also need to refine this TMP over time as circumstances change at NRL. It is recommended that the ETC role be fulfilled by management and/or planning personnel.

Once on board the ETC will need to develop informational materials on commuting options, and a specific implementation work plan for transportation management at NRL. The following key elements are recommended to be included in the work plan:

Identify the Range of Transportation Management Needs – Develop a list of the most important transportation management needs and required actions utilizing this TMP document and other sources to inform the list. These needs may require action by various entities within the Navy or from outside sources such as WMATA or DDOT. This list of needs would serve as early action items that will evolve over time as issues are resolved or conditions change. The list would identify strategies that can be implemented immediately (0 to 12 months), in the near-term (12 to 24 months), and in the short-term (2 years and beyond). The recommendations identified in this TMP and presented below can be broken down into the following general timeframes:

- **Immediate (0 to 12 months) Recommendations**
  - Prepare a memorandum to introduce the ETC to the command leadership and define her/his roles and responsibilities, the goals and objectives that she/he is trying to achieve, discuss the work they will attempt to accomplish, and answer any questions, to gain initial program buy-in.

- Develop an installation-specific Marketing Plan to promote and advertise more efficient transportation and commuting.
- Determine funding sources and explore level of acceptability/legality for a transit shuttle service and as appropriate, prepare a request for proposal (RFP) to obtain this service, at least for a pilot program.
- Establish a schedule for transportation working group meetings and widely announce the meetings to NRL employees.
- Identify a centrally-located place to install a transportation information kiosk or brochure racks that provide information on commuting options, and seek permission to install the kiosk or racks.
- Develop information regarding NRL parking regulations, mass transit options, the Guaranteed Ride Home program, telecommuting, carpool/vanpool matching, third party vanpool service providers, the federal Mass Transit Benefit Program, etc., and make this information available on-line as well as in the transportation information kiosk or racks.
- Develop a quarterly commuter newsletter to present commuting information, proactively answer frequently asked commuting questions, discuss upcoming construction or disruptions that could affect commuting, and identify the schedule of upcoming commuter meetings.
- Contact outside government entities such as NCPC, MWCOG, WMATA, and DDOT, as well as local installations such as JBAB and DHS-St. Elizabeths, to introduce her/himself and determine how such outside entities can assist with commuting issues inherent at NRL.
- Develop an installation-wide list of employees by zip code to aid in transportation planning.
- Work with the NDW Public Works Department to add priority parking spaces reserved for carpool/vanpool parking.
- Contact representatives at http://www.godcgo.com/, which is a service funded by DDOT that specializes in working with employers to find and encourage non-SOV commuting options for employees.

- **Near-Term (12 to 24 months) Recommendations**
  - Prepare and distribute the first Annual Report to NRL management.
  - Develop a full-function commuter website to provide information and resources, and to assist employees with their transportation needs.
  - Investigate legal authority, determine funding sources, and explore level of acceptability for a shuttle bus service to Congress Heights Metro station or other nearby Metro stations.
  - Begin implementing the internal Marketing Plan at NRL.
  - Work with NRL to determine the best way to maximize telecommuting, including procurement of funds for necessary hardware and software, etc.
  - Determine the viability and acceptability of combining parking permits and transit subsidies into a central function/database for more efficient management and enforcement.
  - If funding is made available, develop and implement a regular annual or biennial on-line commuter travel survey to use as one tool to help shape future TMP guidance and ETC efforts. Coordinate with JBAB and DHS-St. Elizabeths ETCs to assist in survey development as needed.

- **Short-Term (24 months and beyond) Recommendations**
  - As funding allows, install bicycle facilities including indoor racks, lockers, and showers to make commuting via bicycle more attractive.
  - Determine the possible mechanisms for implementing a parking management system.
  - As possible, institute other measures such as conversion to alternative fuel vehicles and maintenance equipment (for NRL fleet), and bike-sharing or car-sharing programs (e.g., ZipCar) for midday travel.
  - Identify or develop smartphone applications or other intelligent systems that broadcast road or transit service problems/delays, announce arrivals of shuttle service (if applicable), etc.
  - Determine the long-term feasibility of and funding availability for adding a transit hub/drop-off area outside of the NRL fence line for buses and/or vanpools and kiss and ride as a long-term initiative. Potential locations for a drop-off area include southeast of the main gain (i.e., in the contractor parking area outside of the fence line) and the Credit Union parking area (outside of the fence line) off of Magazine Road.
  - Coordinate with other area installations and employers to advocate for, study, and pilot or implement increased transit services as funding is available (i.e., additional commuter buses, commuter ferry service, etc.). See Section 7.3 for more on Inter-Agency Coordination.
  - Revise and update the TMP if significant employee population changes or mission changes occur beyond the 5-year time horizon of this plan.

Some of the key action items for the ETC to accomplish include the following.

Roll-out the Transportation Management Program – The ETC would need to make both management and employees aware of the TMP, the role of the ETC, the goals and objectives of the program and the projected schedule for implementation.

Develop a Relationship with Government Entities – The ETC should make an initial contact and develop an on-going working relationship with relevant government entities and local installations involved in transportation management. It is recommended that the commuter website discussed below have active links to the various websites maintained by organizations such as MWCOG, WMATA, GSA, and DDOT. These organizations are good resources for obtaining information and keeping current on transportation issues and changes.

TABLE 06: SUMMARY OF TMP MODE SPLIT GOALS AND STRATEGIES

Commuter Travel Mode	Naval Research Laboratory Travel (Commute) Mode Splits						
	Current	Near-Term Goal (5-year)	Long-Term Goal (20-year)	Near-Term Actions (0-5 years)	Implementation Timeframe	Long-Term Actions (20 years)	Implementation Timeframe
Single-Occupant Vehicle (SOV)	Note: The strategies below for reducing SOV trips focus primarily on parking. Strategies for increasing the share of other commute modes may be found in their respective sections of the table.						
	83.2%	80%	25%*	Develop and Implement Parking Rules Instruction to enforce employees, visitors, contractors, etc., to park in designated spaces through ticketing and towing. An installation Traffic Court will be established to penalize offenders.	1 year		
				Investigate ways to ensure that no parking passes are given to those who receive a mass transit subsidy.	1-2 years		
				Implement policy that no new employee spaces will be added to an installation if it exceeds the NCPC parking ratio. If employee parking spaces are added, they must reflect the NCPC parking ratio.	4-5 years		
				Implement policy to re-designate SOV spaces in preferred locations to carpool/vanpool spaces as demand dictates.	2-3 years	As demand dictates for carpool/vanpool and potential shuttle bus usage, SOV spaces no longer being used will be converted into either carpool/vanpool spaces, visitor/contractor spaces, or space for future development.	10-20 years

Note: Mode splits should be calculated based on the number of person trips, not vehicle trips. Calculating mode splits by person trips allows the future mode split percentages to be accurately compared to the existing mode split percentages found in Section 2.7.

* NDW and NRL will strive towards a 25% SOV mode split over the long-term (20 years) if several significant exterior installation transportation infrastructure improvements are implemented to bolster alternative means of accessing the installation. See Section 7.1.2 for more details.

Commuter Travel Mode	Naval Research Laboratory Travel (Commute) Mode Splits						
	Current	Near-Term Goal (5-year)	Long-Term Goal (20-year)	Near-Term Actions (0-5 years)	Implementation Time-frame	Long-Term Actions (20 years)	Implementation Time-frame
All Non-SOV Modes	16.8%	20%	75%*	Prepare a memorandum to introduce the command leadership to the Employee Transportation Coordinator (ETC) and define her/his roles and responsibilities, and the goals and objectives that she/he is trying to achieve. Also, the ETC could hold meetings with command leadership to introduce her/himself and the work that they will be trying to accomplish as well as to answer questions and gain initial program buy-in.	1-5 years		
				Have ETC produce an Annual Report along with an annual commuter survey to share with base operations and management to show progress of TMP objectives.	1-5 years		
				E-mail employees commuter information, answer frequently asked questions, upcoming construction or disruptions that could affect commuting, and identify the schedule of upcoming commuter meetings.	1 year		
				Install a transportation kiosk or brochure racks to hold information on commuting options including but not limited to: parking regulations, mass transit options, Guaranteed Ride Home program, telecommuting, carpool/vanpool matching, third party vanpool service providers, federal Mass Transit Benefit Program.	1-5 years		
				Establish transportation working group meetings and request participation of all commands.	1-2 years		
				If funded, implement a Marketing Plan to promote and advertise more efficient multi-modal commuting options and transit subsidy.	1-5 years		
				Utilize social media webpages (i.e., facebook, twitter) to provide information and resources, and to assist employees with their transportation needs.	1 year		
				Coordinate with Washington Headquarters Service (WHS) to investigate smartphone applications or other intelligent systems that announce arrivals of shuttle service, road, or transit service problems.	1-5 years		
All Non-SOV Modes are comprised of...							
Carpool, Vanpool, Inter-Base Transit	5.5%	7%	29%	Implement policy to re-designate SOV spaces in preferred locations to carpool/vanpool spaces as demand dictates. Promote inter-base transit as funding allows.	2-3 years	ETC to work with DDOT, the Metropolitan Planning Organization/ Transportation Planning Board, and other government agencies to promote employees to carpool/vanpool.	5-20 years
Pedestrians Using/ Not Using Transit	5.8%	7%	34%	Investigate legal authority, determine funding sources, and explore level of acceptability for a shuttle bus service.	2-3 years	If funded, implement shuttle bus service.	6-10 years
Bicycle**	5.5%	6%	10%	Implement policy to install bicycle racks/ storage areas as a design feature for every modernization facility project.	1 year	ETC to work with DDOT, the Metropolitan Planning Organization/ Transportation Planning Board, and other government agencies to promote employees to cycle.	5-20 years
Ferry Service	0%	0%	2%	Investigate Potomac River commuter ferry service feasibility with JBAB.	2-3 years	If funded, participate in Potomac River commuter ferry system with JBAB.	10-20 years

** See Table 03 in Section 2.8 for an explanation of bicycle counts.

Some improvements that would be helpful in increasing transit ridership are beyond the mandate and control of the Navy such as providing additional parking, controlling the price of parking at suburban Metro stations, and improvements to commuter bus service. The ETC should serve as an advocate for keeping these and other additional services on the agenda of the service providers and seeking their development or implementation.

Develop a Commuter Website and Newsletter – A commuter website should be developed to serve as a repository for relevant and useful transportation data related to NRL such as parking/traffic/pedestrian regulations, schedules of shuttle service (if future service were to be provided), etc. The website would also serve as a portal with links to other sites at the Navy/DoD, MWCOG, WMATA, DDOT, and others as relevant. One important website to include is MWCOG's Commuter Connections, the main commuter information resource for Maryland, Virginia, and the District. Commuter Connections promotes telework programs and other pollution reduction strategies, offers a regional Guaranteed Ride Home program, and provides GIS-based software to match commuters for ridesharing.

The website can also help educate new employees, provide forms and applications for easy retrieval, inform the workers on the importance of the program, and post changes to existing programs. The site should also have a frequently asked questions (FAQ) section and contact information for the ETC. When developing the website, consult other federal agency commuter websites for ideas and best practices.

Marketing Plan – It is recommended that the ETC develop a specific marketing plan to educate the NRL workforce about the key elements of the TMP, such as GRH, telecommuting, carpooling/vanpooling, transit subsidies, etc. This plan could include town hall meetings, displaying posters, blast emails, establishing and maintaining a commuter's blog, placing brochures in places where people congregate, establishment of the commuter website, and distribution of flyers at the entry gate or locations where people congregate.

Annual Report – The ETC should prepare an Annual Report to be shared with NRL management, the Public Works Department, and other relevant persons for review, comment, and direct action. The Annual Report would be based on data collected during the year on the topics presented in this TMP (e.g., parking management, shuttle service, parking enforcement, transit subsidies, telecommuting, etc.) as funding permits, and structured to include metrics that can be tracked over time to indicate progress. The Annual Report would help management understand transportation issues and could facilitate or stimulate changes that need to occur over time.

Other specific TMP measures that are recommended are identified below. The ETC would need to work with NRL management to discuss these options, and to implement them over time as agreement is reached and as funding is appropriated.

6.2 Parking Supply and Management

No additional parking spaces are envisioned to be added as a result of the Master Plan and approximately 160 parking spaces will be removed as part of programmed projects included in the Master Plan. As described in this TMP, the use of modes of travel other than use of a single occupant vehicle will be encouraged. The average daily population of NRL is expected to be 5,487 after five years. With the number of employee parking spaces decreasing to 2,585, by the end of the five year time horizon the ratio of parking spaces to employees would be 1:2.12. As discussed below, not all of these spaces on the installation are currently available to employees (some are for police, military fleet, residents, etc.). At this time NRL is not able to further remove parking spaces in the near-term to achieve compliance with NCPC parking ratio guidelines (1:4) due to mission readiness needs, the lack of transit services and infrastructure (HOV facilities) directly serving the installation, unforeseen mission requirements, and the nature of the facility (includes non-office functions such as laboratories and warehouses, and those employing multiple shifts). Compliance with NCPC parking ratios is discussed in more detail in Section 7.1 - Compliance Considerations.

Parking spaces are now largely unassigned, and parking in unrestricted areas generally occurs in an ad hoc manner. Based on comments that were included in the employee transportation survey responses, certain parking lots fill up quickly. It is assumed that such lots are near high employee density areas of NRL. This trend may help account for the number of cars that were recorded as "over parked" during the parking occupancy survey, while the installation-wide parking occupancy is well under 100 percent. Parking on the installation is now free of charge. Measures need to be employed to discourage parking of SOVs and encourage parking for multi-passenger vehicles if the parking ratio is to be decreased. It is recommended that the measures below be considered for implementation to limit the number of people that can or would like to park at the facility. The following strategies have a proven record of limiting the numbers of SOVs that park at a given location (not all of which can be implemented or allowed):

1. Offer a high percentage of priority spaces exclusively for carpool/vanpool use to be provided in priority locations (very near work stations) and communicate to tenants that carpool/vanpool spaces will always be prioritized over SOV employee spaces.
2. Develop and maintain a centralized database of employee and non-employee parking spaces; this database could ultimately be linked to a parking management system.
3. Develop and implement a workable and effective parking enforcement plan and Parking Rules Instruction to enforce employees, visitors, contractors, etc., park in designated spaces through ticketing and towing. An installation Traffic Court will be established to penalize offenders.

The program does not need to include all of the above components to have a positive impact in reducing SOV use. However, combining these measures would offer the maximum level of reduction in SOV use. Parking spaces not required for Government vehicles or official needs should be assigned to employees in the following priority: employees with disabilities; executive officials; vanpools; carpools; alternative fuel vehicles; single occupant commuting vehicles.

Priority Spaces for Carpools/Vanpool Vehicles - This measure offers reserved priority parking for carpool/vanpool vehicles. Offering conveniently located reserved space is a strong incentive to carpool/vanpool, especially where parking is at a premium. The ETC should communicate to tenants that carpool/vanpool spaces will always be prioritized over SOV employee spaces and that these spaces will be created from general SOV spaces to ensure that carpools/vanpools are always accommodated and highly encouraged.

Centralized Commuting and Parking Functions - Centralizing the commuting and parking functions under a single manager will lead to a more coordinated, holistic approach to commuting and parking, ensure that transit subsidies are not issued to people with parking permits, and offer a mechanism to assist in parking enforcement. This function will include assigning parking spaces/ permits in the order discussed above, and keeping a record of all NRL personnel that receive transit subsidies.

Parking Management System – Develop a workable and effective parking enforcement plan. This will eliminate over-parking in certain areas, allow priority assignment of carpool/vanpool spaces, and aid in tracking and enforcement.

Visitor Spaces - Given the large number of visitors at NRL as noted by NRL staff, it could be beneficial to examine designating existing employee spaces as visitor only spaces near frequently visited buildings. Changing the designation of spaces in this way will help to ensure visitors have parking available, reduce competition for employee spaces between employees and visitors, and have the positive impact of improving the parking ratio.

6.3 Transit Subsidies

Although 35 of the Metrorail stations serve federal facilities, the closest station to NRL (Green Line Congress Heights) is more than two miles from the facility and not served by a direct bus route to NRL. There is one bus stop located outside the NRL gate that is served by Metrobus A4/W5, which travels to the Anacostia Metro station on the Green Line. Department of Defense employees are eligible to receive up to $130 per month in transit subsidies as of January 2014 to offset their commuting costs via the DoD National Capital Region (NCR) Mass Transportation Benefit Program (MTBP). This benefit may be used to pay for travel costs on Metrorail, Metrobus and the D.C. Circulator bus, commuter buses, commuter rail, and some vanpools. It may not be used to pay for parking at mass transit stations. The $130 NCR MTBP transit subsidy is a decrease from a one year raise of the subsidy to $245 per month in 2013.[19]

Transportation survey results indicate that the enhanced use of transit subsidies by NRL employees could encourage greater use of mass transit. According to the survey, 19.6 percent of respondents were not aware of the program and only 9.1 percent of the respondents currently receive transit subsidies, with 2.6 percent receiving subsidies that cover some of the commuting cost and 6.5 percent receiving subsidies that entirely offset commuting costs. Thus, with an ETC in place, there is the potential to increase the percent of the NRL population obtaining transit subsidies and utilizing mass transit for commuting to work.

Given the above, it is recommended that the ETC make a wide distribution of the details and benefits of the transit subsidies and conduct seminars on the topic to help inform potential program participants.

6.4 Telecommuting

The Telework Enhancement Act of 2010 requires at least 20 percent of the hours worked in every two administrative weeks by federal employees be via telework. While certain commands in the Navy have the ability to meet or exceed this goal, researchers such as those at NRL have difficulty due to the nature of their work, security demands, and/or software/hardware availability. It is clear from the transportation survey data that additional employees could take advantage of telecommuting if existing barriers can be removed. Currently, 22.2 percent of the workforce telecommute a portion of their work week, but 38.1 percent of overall respondents have telecommuting available and would like to start using this option and 24.1 percent do not have it available but would like to telecommute a portion of their week. Approximately 15.7 percent of respondents stated that they would not want to telecommute.

Telework can be a viable option for general office workers and certain administrative functions. For other functions that require being on site like fire and security personnel, or positions that require continuous collaboration among workers (e.g. researchers), or where classified information is routinely used, teleworking is not feasible. The ETC will need to work with leadership to discuss the benefits of telework such as improved morale, employee recruitment, and employee retention. Cost estimates need to be completed and funding will need to be provided in order to increase the level of telecommuting.

[19] See footnote #8 in Section 2.12.8 and footnote #14 in Section 4.3 for more details on the history of the MTBP transit subsidy.

6.5 Shuttle Bus Service

One option that can be considered to encourage more employees to use mass transit is to provide shuttle service between a nearby Metro station and several work locations within the NRL campus. Currently, shuttles to/from Metro stations and the installation are not allowed due to current regulations, laws, and security concerns. However, if there is a re-evaluation of laws and regulations with lawmakers, available funding, and justified demand, shuttle service could be made possible. A shuttle or other ground transportation option provided from any of several nearby Metro station locations to NRL could promote greater use of public transportation. Nearby Metro stations include the Green Line Congress Heights Station (about 2.6 miles or an 8 minute drive[20]) or the Blue and Yellow Line King Street Station (about 6.6 miles or a 10 minute drive) which is also served by Amtrak, the Virginia Railway Express (VRE), and DASH – Alexandria's local bus system. Another option would be a shuttle or other ground transportation to L'Enfant Plaza on the Green, Yellow, Blue, and Orange lines, that also services VRE. Depending on which nearby station was chosen, coordinating a shuttle to the Metro with other nearby installations and facilities, such as JBAB, could allow for shared funding and lower costs to each installation. The ETC should work with neighboring installations to explore such shared shuttle opportunities provided the resulting service can maintain regular headways and minimal/reasonable transfer times for employees.

A shuttle or ground transportation from select nearby Metro stations, such as the King Street Station, could create connections from commuter rail systems to the installation. A shuttle or ground transportation from select nearby Metro stations, such as the Crystal City or Pentagon Stations, however, could create connections to the installation from commuter bus systems in Virginia such as OmniRide and Loudoun County Transit, as well as connections from local bus systems in Virginia such as Arlington Transit (ART) and the Fairfax Connector.

A strong demand for shuttle service was identified in the employee transportation survey. The survey indicated that for the group of people that are not already using mass transit or walking/biking, 22.7 percent reported that they would switch to mass transit, 9.9 percent would very likely switch to mass transit, and 29.6 percent reported that they would possibly switch (totaling 62.2 percent that would switch to mass transit, very likely switch, or possibly switch). This total represents a significant opportunity to cause a travel mode shift from SOV to mass transit. It is assumed that the proposed transit shuttle can securely enter the facility since only people with valid identification would be allowed on the shuttle.

Applying the same percentages as found in the transportation survey (614 people responded to this question or 12.6 percent of the worker population) to the entire NRL population indicates that 1,105 people would switch to mass transit if shuttle service were provided. Again, applying the same percentages yields 1,924 workers that may (reported as very likely and possibly in the survey) switch and 1,841 that are not likely or would not switch from driving alone to mass transit.

Given the above, it is recommended that full consideration be given to implementing transit shuttle service at NRL. Based on the results presented above, as many as 3,029 people would consider switching from driving alone to mass transit with reliable shuttle service in place. It is suggested that a second specific survey be performed to corroborate the responses found in this survey.

In addition to shuttle bus service to area Metro Stations and transit hubs, it is recommended that NRL work to expand upon external shuttle services to provide more frequent trips between other DoD installations and the Pentagon. Such services could potentially be combined with neighboring JBAB to gain greater efficiencies.

6.6 Commuter Bus Services

Currently no buses from Virginia serve either of the Green Line stations near NRL or NRL itself, although many NRL employees commute from Northern Virginia. However, several commuter bus services from Virginia already serve neighboring JBAB or the nearby WNY and future services will serve DHS-St. Elizabeths. The ETC should work with the NAVFAC's Regional ETC to contact commuter bus service providers to determine the feasibility of adding a stop on existing commuter routes at NRL. In conjunction with these efforts, and if funding is available, the ETC in coordination with other interested parties might perform a demand analysis or initial screening to determine if there is sufficient demand for such commuter bus stops at NRL. Such initial screening can be performed through additional questions on the employee commuter survey and examination of employee zip code data and commuting times.

6.7 Ridesharing

To increase ridesharing, the inhibiting reasons found in the survey results will need to be removed to the degree possible. A fairly high percentage already carpool/vanpool (7.4 percent), prefer using non-SOV means (6.9 percent), or prefer driving alone (16.8 percent) to travel to the facility. Others work inconsistent hours (36.0 percent) and would likely not switch to carpooling/vanpooling. The primary issue that needs to be resolved based upon the transportation survey results is a lack of knowledge on how and where to gain information on ridesharing since many respondents did not know how or where to find information on ridesharing, or have tried to rideshare and failed (10.8 percent responded that way in the survey). The second most expressed reason at 3.9 percent is a need to drive to other facilities during the day and the last reason is a concern about getting home in an emergency.

[20] Distances and driving times used in this paragraph were obtained from Google maps (https://maps.google.com). The driving times do not account for traffic and other delays.

Given the above, the ETC will need to develop an information package on the benefits of ridesharing and how and where to apply. The ETC will need to take an active role assisting people to find rideshare partners by pointing them to regional rideshare matching service providers; maintaining a list of people wanting to rideshare, their work hours, and zip code location; holding zip code get-togethers where people can meet others in or near their zip code that may make a workable rideshare partner; and actively marketing ridesharing to employees via the newsletter and during employee orientation and transportation meetings. Employees may feel more comfortable when someone has taken the first step of introducing potential rideshare partners. The ETC can examine the feasibility of coordinating with JBAB and/or DHS-St. Elizabeths to gather a wider pool of ridesharing partners in close proximity to NRL.

It has been demonstrated that an active rideshare coordinator can substantially increase the percentage of carpool/ vanpool users. One study found this increase to be greater than six percent above current levels.[21] If the ETC is half as successful at increasing ridesharing as found in that study (3 percent), then of the 83.2 percent of people that drive alone in good weather, approximately 122 SOV trips would convert to ridesharing (with 3 people in an average rideshare vehicle, approximately 70 vehicle trips would be removed).

In conclusion, to help foster ridesharing the ETC needs to:

- Actively market ridesharing to employees and management on a continuing basis;
- Develop an information package on how/where to apply for ridesharing;
- Take an active role in ride-matching by maintaining a list of potential rideshare employees, coordinating meetings of interested employees, and marketing rideshare opportunities in the transportation newsletter;
- Establish and advertise a GRH program;
- Determine if opportunities exist to provide vehicles for work-related travel during the day (ZipCars, government vehicles, base taxi, adding DoD shuttle service to NRL, etc.) and advertise these opportunities to employees.

[21] Current Status of Ridesharing Activities Transportation Research Record No. 823, Brunso, J. M., Hartgen, D. T., 1981

6.8 Bicycle Facilities and Walkers

Based on the transportation survey a small percentage of people would switch their primary travel mode to bicycle. The transportation survey reveals that for dedicated drivers, 5.7 percent said that they would switch to bike travel if amenities were provided, another 5.7 percent noted that they likely would, and 8.1 percent said that they possibly would use bicycles. Most people would not switch, 47.0 percent said no and 18.1 percent responded that it was not likely, while 12.6 percent said that amenities were not the issue in selecting bicycles as a travel mode. To maximize the number of bicycle riders and walkers it is suggested that lockers and a shower facility be installed at NRL. This will require funding and space.

The ETC should meet with employees that travel by bicycle and with those that may and determine if other issues such as a lack of dedicated bike lanes, road configurations, traffic conflicts, etc., interfere with ridership. Based on the feedback gained the ETC should meet with external planning agencies and stakeholders such as DDOT or DCOP to discuss possible improvements such as erecting bicycle signage, maps, improving bicycle connections, etc.

Given the data from the survey and bicycle advocates, it is possible that somewhere near five percent of employees could be encouraged to bicycle to work if amenities and/or incentives were put in place.

As noted in the Master Plan, the ETC should work with installation planners to ensure an alignment between pedestrian corridors and multi-modal circulation to enable a synergy within the installation.

6.9 Variable Work Schedules

At the time of the NRL employee transportation survey in 2011, the following statistics were reported by NRL employees.

- About 24.9 percent of NRL employees reported they work an AWS and 25.9 percent work a flex time schedule, while about 22.4 percent of respondents reported that they currently telecommute for a portion of their work week.
- The number of people reporting that AWS is not available but that they would like to use it is 24.2 percent.
- It was reported that 29.6 percent of employees felt that they would benefit or would likely benefit from a flex time arrangement.
- The survey reported that 38.1 percent of employees have the option to telecommute and would like to start using the option.

AWS participation has increased since 2011, as NRL staff noted that in 2013 NRL participation in AWS is near 100 percent.

It is recognized that due to the nature of the work at NRL, it may not be feasible for some employees to telecommute on a regular basis. While improvements have been made in increasing the percentage of employees who utilize an AWS, it is suggested that the ETC approach leadership and discuss the potential for continued and increased use of flex time and telecommuting.

6.10 Guaranteed-Ride-Home and Ride-Matching

A GRH program provides a reliable, convenient, and free emergency ride home from work for commuters who regularly carpool, vanpool, bicycle, walk, or take transit to work. Thus, having a successful GRH program available for use by employees is a fundamental component of this TMP as it would support a decrease in the need for parking space and an increase in ride sharing, walking, or bicycle use. It is recommended that the existing MWCOG GRH program could be utilized by employees at NRL.

MWCOG offers comprehensive GRH service under their Commuter Connections program. The Commuter Connections program is used by many employers in the Washington, D.C. area including federal agencies. Additionally, this type of program encourages employees to rideshare without concern about working overtime or attending to personal emergencies. Employees are generally receptive to GRH programs. The existence of the program can increase interest in the other elements of the TMP by encouraging commuters with an initial interest in the GRH program to explore various alternative commute options. As identified in the transportation survey, the worry about getting home in an emergency was fairly small at 3.2 percent (when asked why an employee does not rideshare).

The ETC needs to advertise and promote the GRH program and make information readily available and easy to access for NRL employees. In addition to making information available, the ETC needs to offer help in understanding how to sign up for the program and promote GRH programs on the commuter website, in commuter meetings/discussions, at informational meetings or management briefings, and via brochures provided at literature racks located at high traffic areas throughout the facility.

In addition to GRH, the ETC should work to create a resource guide showing the multiple options to travel between installations in an effort to increase awareness of non-SOV modes. In the absence of adequate transit or shuttle opportunities to make these trips (i.e., no direct transit service runs from NRL to the WNY), use of installation vehicles for mid-day trips could be encouraged in coordination with non-SOV commuting options to the installation, thereby allowing employees to leave their vehicle at home on days they may need it for mid-day work trips.

6.11 Commuter Ferry Service

In the interest of transportation management, the ETC should investigate Potomac River commuter ferry service feasibility with JBAB. Using employee zip code data and adding several questions to the next employee commuting survey to gauge employee interest could help to determine demand for a commuter ferry service to use in gauging feasibility. If commuter ferry service is tested or implemented at JBAB, the ETC should work with installation leadership at both sites to coordinate access for NRL employees, possibly through extension of one of the existing shuttle services.

6.12 Other Measures

Other measures that the ETC can work with management on include the following: obtain funding for development of an intelligent transportation system or smartphone applications to announce shuttle bus arrival/departure information, increase the amount of alternative fuel vehicles available in the fleet, explore and communicate the best non-SOV inter-installation travel options, and explore greater use of alternative fuel maintenance equipment.

The ETC should continue to support, encourage, and improve video conferencing. Doing this will encourage people not to take short unnecessary workday trips.

Create a wayfinding system that identifies and encourages use of transit. To complement this wayfinding system, increased information could be shared with employees regarding access to real-time transit information such as local bus service between NRL and nearby Metro stations and other transportation options.

Once other TMP strategies with higher potential impact for altering commuting patterns away from SOV travel have been explored, the ETC should also explore how to facilitate future use of commuter rail, commuter bus, streetcar, and commuter ferry service to NRL, even if these services do not directly serve NRL at the moment. Such efforts should be considered a lower priority if such trips and connections require additional transit transfers because the additional transfers have been documented to decrease employees' willingness to commute via multiple modes of transportation.

Although generally beyond the scope and timeframe of this TMP, it is worthwhile to note that the Master Plan includes several long-term (20 year) transportation considerations that are recommended for further study. These considerations include realigning roads to improve circulation and connections between the north and south campuses, facilitating better north-south vehicular circulation with road improvements, reconfiguring parking lots for better efficiency thereby enabling the consolidation of parking into less areas, and considering relocation of surface parking into structured parking garages under certain conditions. Also, although not a defined goal of TMPs, minimizing impervious pavement to meet sustainability and/or stormwater requirements can be associated with reducing parking. Integrating pervious pavement or planting areas in place of impervious parking spaces along Smith Street along the waterfront could help with stormwater absorption and filtration, and be a future area for parking reduction that would extend the open space along the waterfront.

7.0 Planning Criteria and Compliance

7.1 Compliance Considerations

Given the location of NRL within the National Capital region (NCR), review responsibility of this TMP falls under the purview of NCPC.

7.1.1 Parking Requirements

Federal TMP guidelines (as per the Comprehensive Plan for the NCR) attach considerable importance to the issue of parking supply and its relation to the employee population served. NRL is situated within the Historic District of Columbia where the parking-to-employee ratio goal set by NCPC is one parking space for every four employees (1:4). The Comprehensive Plan provides special consideration to federal facilities such as NRL with non-office missions such as laboratories and warehousing, and those facilities employing multiple shifts. In these instances, special consideration is given to meeting the 1:4 parking ratio.[22]

The Comprehensive Plan guidelines also make a direct correlation between acceptable parking ratios and proximity to Metrorail, and the overall quality of available transit services and walking distances/conditions in the region. Therefore, federal facilities such as NRL with more stringent parking ratios need to be accessible to Metrorail and other transit services as well as have an acceptable walking environment for pedestrians.

With 2,745 employee parking spaces and a current population of 4,872 employees, the current parking ratio at NRL is 1:1.77. As a result of the projects in the Master Plan there will be a reduction of 160 parking spaces within five years. With additional personnel expected at NRL due to minimal mission changes (615 new employees), in the near-term the average daily population is expected to be 5,487 personnel. Therefore, in five years, the ratio of parking spaces to employees is expected to be 1:2.12 (Table 07), when carpool, vanpool, and handicapped spaces are included in the parking ratio calculation. Due to unforeseen mission requirements and funding restrictions, it is not possible with the near-term timeframe of the Master Plan and TMP to meet the 1:4 parking ratio.

TABLE 07: EXISTING AND FUTURE PARKING RATIOS

Year	Employee Population	Employee Parking	Parking Ratio
Existing	4,872	2,745	1:1.77
Near-term (5 years)	5,487	2,585	1:2.12
Long-term (20 years)	--	--	1:4*

Source: NAVFAC, 2012
General Note: NCPC's preferred parking ratio is 1:4.00.
*NDW and NRL will strive towards a 1:4 parking ratio over the long-term (20 years) if several significant exterior installation transportation infrastructure improvements are implemented to bolster alternative means of accessing the installation. See Section 7.1.2 for more details.

[22] National Capital Planning Commission, Comprehensive Plan for the National Capital: Transportation Element, Federal Element, pp. 83-84

7.1.2 Parking Compliance

Although unable to meet the NCPC parking ratio goals for the near term, NDW on behalf of NRL is committed towards doing it's part in reducing the use of single occupant vehicles (SOVs). NDW and the installation will strive towards a 1:4 parking ratio over the long-term if several of the following infrastructure improvements can be implemented to bolster alternative means of accessing the installation:

- Reliable and frequent shuttle service to and from the metro is established.
- DDOT develops viable and efficient transportation infrastructure that supports non-SOV commuting options such as HOV facilities, or other such comparable off-installation improvements that extend from regional highways to the installation.
- Additional bus service is provided to the installation with expanded express or commuter bus routes to the surrounding region.
- Explore the possibilities of having a streetcar station at NRL if there is ever a possibility of extending the DC Streetcar farther south.
- Improvements are made to the pedestrian and bicycle infrastructure that better links NRL with the surrounding neighborhoods, regional bicycle facilities, and transit systems.
- Change the current method used to calculate parking ratios by not including both carpool and vanpool spaces within the employee parking ratio.

7.1.3 Air Quality

One of the key issues behind reducing the number and/or distance of vehicle trips in the region is the need to reduce the amount of GHG emissions from vehicles. The recommendations, regulations, and Executive Orders relating to reducing GHG from motor vehicles include:

- EO 13514 - a two percent per year reduction in GHG emissions;
- Energy and Independence Security Act of 2007 - a 20 percent petroleum reduction by 2020 and 10 percent alternative fuel increase by 2020;
- Navy Energy Vision;
- Telework Enhancement Act of 2010 - at least 20 percent of the hours worked in every two administrative weeks to be via telecommuting;
- Maryland GHG Reduction Act of 2009 - a phased 25 percent reduction in GHG emissions by 2020; and
- MWCOG Region Forward - a 20 percent GHG reduction (below 2005 levels) by 2020, 80 percent reduction below 2005 levels by 2050.

The percentage of SOV trips commuting to NRL on a daily basis are expected to be reduced through the implementation of this TMP. As described above, it is estimated that mass transit ridership is expected to increase and the telecommuting option will be more highly utilized. Additionally, bike utilization should increase by a small amount. These actions will help curtail mobile source air

emissions caused by additional base user growth and positively contribute to NRL achieving compliance with the previously stated compliance regulations.

Since the NCR is a highly a developed metropolitan area with an expansive transportation system constantly in need of evaluation of its effectiveness, it is suggested that the Navy coordinates with MWCOG in order to identify ways to integrate/evaluate the TMP with respect to the Constrained Long Range Plan (CLRP) and the Transportation Improvement Program (TIP) that are prepared pursuant to Clean Air Act. The ETC appointed at NRL will also continually and cooperatively work with local, state, and regional agencies to address air quality, traffic, and other environmental concerns.

7.2 TMP Monitoring and Evaluation

In order to guarantee a successful TMP, its implementation alone is not sufficient. The TMP needs to be monitored, evaluated, and restructured as necessary (based on potential command changes) and until proven effective.

7.2.1 Progress Monitoring and Annual Evaluation

Progress in achieving TMP goals and objectives will need to be continually monitored. It is recommended that the ETC work with installation and NDW management and staff to develop and implement systems where data can be collected on a continual basis. As discussed above, the ETC will prepare an Annual Report to management that would be based on the data collected during the year on the topics presented in this TMP (e.g., parking management, shuttle service, parking enforcement, transit subsidies, telecommuting, etc.) as funding permits. At a minimum, an employee survey and updates on the efforts to implement the near-term action strategies described in Table 06 should be included. Review of the number of carpools/vanpools and transit subsidy applications, shuttle riders, parking area utilization rates, and parking permits will also serve as solid supporting data in determining whether any adjustments need to be made over time.

Whenever possible, the Annual Report should be structured to include metrics that can be tracked over time to indicate progress. The Annual Report will need to discuss progress and compliance with goals and could also include recommended next steps and funding or management decisions that are needed to continue improvement towards the objectives and goals of the TMP. Overall, the Annual Report would help management understand transportation issues and could facilitate or stimulate changes that need to occur over time.

7.2.2 Amending the TMP

It is recommended that the TMP be updated and revised if significant employee population changes or mission changes occur beyond the 5-year time horizon of this plan. Updating the TMP should be coordinated with the Master Plan update, if possible, so that the update of both documents is performed simultaneously.

When updates or amendments to the TMP are made, it is important that quantifiable and reliable data are used for benchmarks for measuring the success of the TMP moving forward. Effective benchmark data include: routine gate counts/ classifications and vehicle occupancy counts, employee surveys, and robust database management systems (e.g., applications for MTBP, GRH, carpool/ vanpool, parking permits, etc.), as well as the data methods previously mentioned. As funding permits, these data will be collected and included in any updates to the TMP, along with a discussion on progress and compliance with goals.

7.3 Interagency Coordination

Multi-modal Transportation

Prior to and during implementation of the TMP recommendations, it is important that NDW on behalf of NRL continues to coordinate with the JBAB and DHS ETCs on alternative commuting options and support services that can mutually benefit both NRL, JBAB, and/or DHS-St. Elizabeths due to their close proximity. Examples of prime areas for coordination include increased commuter bus service to the installations; stops on existing commuter bus routes to JBAB, DHS-St. Elizabeths, or into D.C.; a shared shuttle system to the Metro; and additional vanpool services and ridesharing opportunities. Coordination and evaluation of the effectiveness of various TMP recommendations will inform on-going efforts and future TMP revisions.

Active and ongoing support from DDOT, WMATA, and other local agencies will also be crucial for NRL to be successful in its future efforts to reduce SOV traffic to and from the installation. Support is anticipated to be in the form of education and enforcement of current multi-modal policies as well as specific public transportation improvements. Some examples of foreseeable improvements include increased shuttle bus capacity at Metro stations, implementation of planned bicycle improvements, and corridor and intersection improvements that reinforce the city's urban fabric and enhance the safety for non-motorized users of the roadway network.

Local Roadway Projects

Until and during the construction of the South Capitol Street Bridge and the I-295/Malcolm X Avenue interchange, the roads leading to the installation from the north (Interstate/D.C.-295, Southeast Freeway, South Capitol Street Bridge, etc.) will experience congestion and delays. During this time it will not only be important to work closely with DDOT and neighboring JBAB and DHS-St. Elizabeths to minimize transportation issues and delays, but clear communication to employees of impacts, schedule, and changes to the surrounding roadways will be critical to easing the growing pains that come with new construction. It is recommended during this time that NRL impress upon tenant agencies the importance of supporting alternative work schedules and staggered arrival and departure times to ease delays and congestion.

8.0 Summary and Conclusion

The NRL gate is located 2.6 miles from the closest Metro station and the installation's mission and workforce is research-oriented, with laboratory facilities as opposed to the customary office functions of most federal facilities. Nevertheless, NDW will strive to achieve the goals and objectives of this TMP and work towards improving the parking ratio at the installation through the measures discussed in this report.

NDW will strive to improve the transportation impacts of the installation by reducing parking on the installation through upcoming programmed projects, thus improving the parking ratio within the timeframe of this TMP. NDW also intends to implement the strategies detailed in this plan, the first and most critical step of which will be centralizing parking and all commuting concerns under one function and appointing an ETC (possibly shared with other facilities) to manage and advocate for the program. NDW will investigate the potential for a shuttle service to the Congress Heights Metro station, the King Street Metro station in Virginia (with direct VRE and commuter bus connections), and/or another Metro station if laws and regulations are changed and if funding is available. The Regional ETC or ETC will also assist in ridematching, signing employees up for carpools and vanpools, and providing preferential spaces for carpool/vanpool vehicles. Bicycle facilities will be improved and efforts will be made to increase the level of telecommuting at the tenant commands. These efforts will be augmented and supported by additional and improved information that will be made more easily available to employees at NRL to assist them in making commuting and transportation decisions. Combined, these measures will decrease the number of SOV commuter trips to NRL and enhance and promote mobility options for employees.

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APPENDIX A: GATE COUNTS AND VEHICLE CLASSIFICATION DATA

Vehicle Volumes

AM			Vehicles In	Vehicles Out
5:30 AM	to	5:45 AM	42	4
5:45 AM	to	6:00 AM	61	0
6:00 AM	to	6:15 AM	129	3
6:15 AM	to	6:30 AM	125	3
6:30 AM	to	6:45 AM	121	3
6:45 AM	to	7:00 AM	118	4
7:00 AM	to	7:15 AM	131	3
7:15 AM	to	7:30 AM	138	4
7:30 AM	to	7:45 AM	109	5
7:45 AM	to	8:00 AM	118	5
8:00 AM	to	8:15 AM	152	9
8:15 AM	to	8:30 AM	129	11
8:30 AM	to	8:45 AM	164	8
8:45 AM	to	9:00 AM	146	11
9:00 AM	to	9:15 AM	177	6
9:15 AM	to	9:30 AM	136	6
Total			**1996**	**85**

Peaks	Time	Number	% Total
2-hour	715-915	1133	56.8
1-hour	830-930	623	31.2
15-minute	900-915	177	8.9

PM			Vehicles In	Vehicles Out
3:00 PM	to	3:15 PM	5	187
3:15 PM	to	3:30 PM	3	108
3:30 PM	to	3:45 PM	7	113
3:45 PM	to	4:00 PM	6	125
4:00 PM	to	4:15 PM	5	175
4:15 PM	to	4:30 PM	3	102
4:30 PM	to	4:45 PM	4	130
4:45 PM	to	5:00 PM	4	103
5:00 PM	to	5:15 PM	4	162
5:15 PM	to	5:30 PM	0	162
5:30 PM	to	5:45 PM	3	149
5:45 PM	to	6:00 PM	8	123
6:00 PM	to	6:15 PM	5	128
6:15 PM	to	6:30 PM	1	92
6:30 PM	to	6:45 PM	1	85
6:45 PM	to	7:00 PM	1	49
Total			**60**	**1993**

Peaks	Time	Number	% Total
2-hour	400-600	1106	55.5
1-hour	500-600	596	29.9
15-minute	300-315	187	9.4

PM	
3:00	
3:15	
3:30	
3:45	
4:00	
4:15	
4:30	
4:45	
5:00	
5:15	
5:30	
5:45	
6:00	
6:15	
6:30	
6:45	
Total	

		2
		1
		15

GATE COUNTS AND VEHICLE CLASSIFICATION DATA

Pedestrian Volumes

AM			Peds In	Peds Out	PM
5:30 AM	to	5:45 AM	0	0	3:00
5:45 AM	to	6:00 AM	1	0	3:15
6:00 AM	to	6:15 AM	4	1	3:30
6:15 AM	to	6:30 AM	12	0	3:45
6:30 AM	to	6:45 AM	12	0	4:00
6:45 AM	to	7:00 AM	17	0	4:15
7:00 AM	to	7:15 AM	21	1	4:30
7:15 AM	to	7:30 AM	3	0	4:45
7:30 AM	to	7:45 AM	13	0	5:00
7:45 AM	to	8:00 AM	3	2	5:15
8:00 AM	to	8:15 AM	2	0	5:30
8:15 AM	to	8:30 AM	20	1	5:45
8:30 AM	to	8:45 AM	7	1	6:00
8:45 AM	to	9:00 AM	8	0	6:15
9:00 AM	to	9:15 AM	7	0	6:30
9:15 AM	to	9:30 AM	3	0	6:45
Total			133	6	

Peaks	Time	Number	% Total		
2-hour	630-830	91	68.4		2
1-hour	615-715	62	46.6		1
15 min	700-715	21	15.8		15

PM			Peds In	Peds Out
3:00 PM	to	3:15 PM	0	1
3:15 PM	to	3:30 PM	0	1
3:30 PM	to	3:45 PM	1	0
3:45 PM	to	4:00 PM	0	1
4:00 PM	to	4:15 PM	0	1
4:15 PM	to	4:30 PM	1	0
4:30 PM	to	4:45 PM	0	5
4:45 PM	to	5:00 PM	0	4
5:00 PM	to	5:15 PM	0	1
5:15 PM	to	5:30 PM	0	1
5:30 PM	to	5:45 PM	0	0
5:45 PM	to	6:00 PM	0	0
6:00 PM	to	6:15 PM	2	2
6:15 PM	to	6:30 PM	1	0
6:30 PM	to	6:45 PM	0	0
6:45 PM	to	7:00 PM	0	0
Total			5	17

Peaks	Time	Number	% Total
2-hour			
1-hour			
15 min			

GATE COUNTS AND VEHICLE CLASSIFICATION DATA

Inbound Volumes Only AM

Time	Passenger Cars Number of Occupants				Small Trucks Number of Occupants				Large Trucks Number of Occupants				Transit Vehicles Number of Occupants				
	1	2	3	>3	1	2	3	>3	1	2	3	>3	1	2	3	>3	Total
5:30 AM to 5:45 AM	40	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	42
5:45 AM to 6:00 AM	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61
6:00 AM to 6:15 AM	127	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	129
6:15 AM to 6:30 AM	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125
6:30 AM to 6:45 AM	117	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	121
6:45 AM to 7:00 AM	108	3	1	0	3	1	0	1	0	0	0	0	1	0	0	0	118
7:00 AM to 7:15 AM	124	5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	131
7:15 AM to 7:30 AM	130	5	1	0	2	0	0	0	0	0	0	0	0	0	0	0	138
7:30 AM to 7:45 AM	104	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	109
7:45 AM to 8:00 AM	112	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	118
8:00 AM to 8:15 AM	141	6	0	0	0	1	0	1	1	0	0	0	0	0	0	2	152
8:15 AM to 8:30 AM	123	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	129
8:30 AM to 8:45 AM	158	1	0	0	3	0	0	1	1	0	0	0	0	0	0	0	164
8:45 AM to 9:00 AM	139	5	1	0	1	0	0	0	0	0	0	0	0	0	0	0	146
9:00 AM to 9:15 AM	169	5	0	0	2	0	0	1	0	0	0	0	0	0	0	0	177
9:15 AM to 9:30 AM	128	4	1	1	1	0	0	0	1	0	0	0	0	0	0	0	136
	1906	46	6	1	23	4	0	4	3	0	0	0	1	0	0	2	1996
Totals	1959				31				3				3				
% Total Vehicles	95.5				1.2				0.2				0.1				
% Passenger Cars	97.3	2.3	0.3	0.1													

Inbound Volumes Only PM

Time	Passenger Cars Number of Occupants				Small Trucks Number of Occupants				Large Trucks Number of Occupants				Transit Vehicles Number of Occupants				
	1	2	3	>3	1	2	3	>3	1	2	3	>3	1	2	3	>3	Total
3:00 PM to 3:15 PM	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
3:15 PM to 3:30 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
3:30 PM to 3:45 PM	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
3:45 PM to 4:00 PM	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
4:00 PM to 4:15 PM	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
4:15 PM to 4:30 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:30 PM to 4:45 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:45 PM to 5:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:00 PM to 5:15 PM	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM to 5:45 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM to 6:00 PM	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8
6:00 PM to 6:15 PM	2	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	5
6:15 PM to 6:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:30 PM to 6:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:45 PM to 7:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	53	2	2	0	0	0	0	3	0	0	0	0	0	0	0	0	60
Totals	57				3				0				0				
% Total Vehicles	88.3				0.0				0.0				0.0				
% Passenger Cars	93.0	3.5	3.5	0.0													

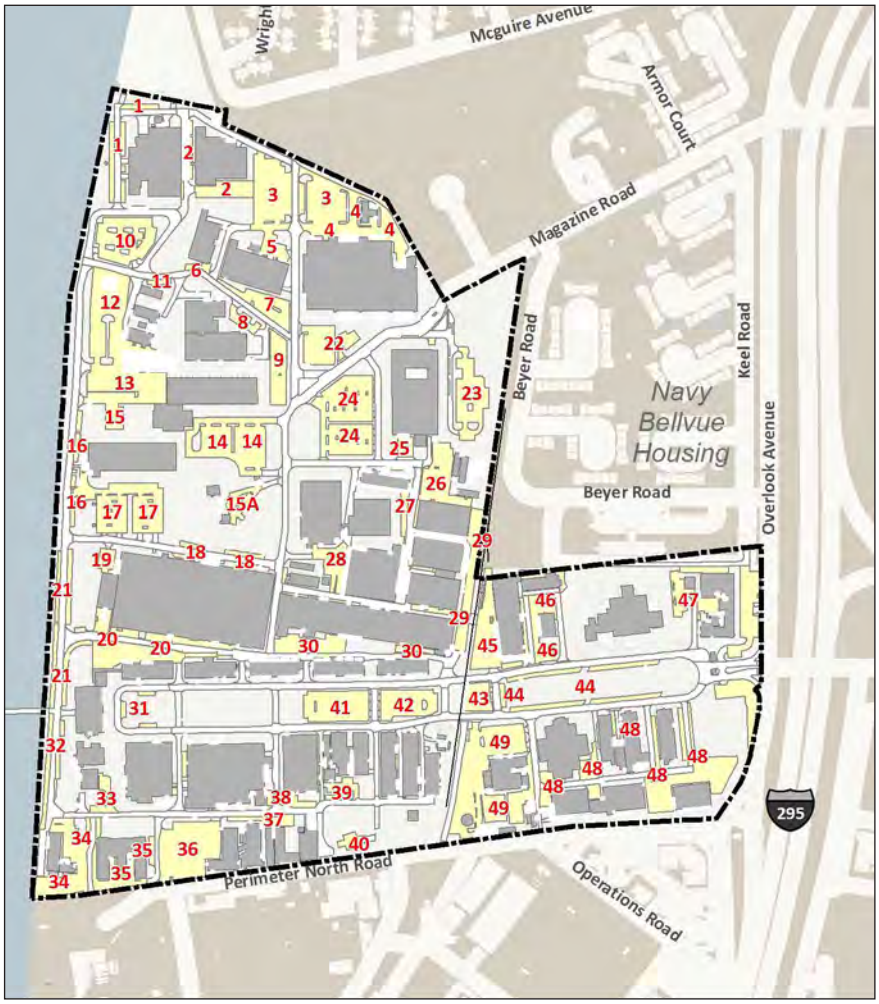
APPENDIX B: PARKING INVENTORY AND OCCUPANCY

Parking Inventory

	Unrestricted	Handicapped	Reserved	Visitor	NMIC	Loading	Golf Carts	Gov't Carts	Small Carts	Cushman Cart	For Meetings Only	Over parked	Credit Union or Credit Union Visitor	Supply Store Customer 30 Minutes	TIS S/Desk Customers	Total
Inventory	2,341	44	360	16	0	4	5	13	3	1	16	0	5	2	4	2,814
Occupancy	1,742	12	222	8	0	1	7	8	1	0	0	34	0	2	4	2,041
	74%	27%	62%	50%		25%	140%	62%	33%	0%	0%		0%	100%	100%	73%

Counts were conducted on February 16, 2011between 10 AM and 3 PM

Parking Occupancy



Installation Boundary
Building
36 Parking Area

N

0 200 400 800
Feet

Sources:
Washington, D.C. Department of Transportation, 2012
Washington, D.C. OCTO/GIS, 2012
ESRI - Streetmap USA, 2007
NRL PWD, 2011
Naval District Washington, 2010

Lot #	Occupancy
1	60.7%
2	70.0%
3	37.8%
4	NA
5	88.9%
6	55.6%
7	45.2%
8	83.3%
9	93.9%
10	28.4%
11	90.0%
12	85.3%
13	77.2%
14	85.0%
15	100.0%
15A	NA
16	41.0%
17	94.7%
18	75.8%
19	72.2%
20	88.4%
21	70.1%
22	0.0%
23	55.7%
24	97.1%
25	NA
26	100.0%
27	100.0%
28	81.8%
29	78.1%
30	92.0%

Lot #	Occupancy
31	61.9%
32	72.9%
33	114.3%
34	113.0%
35	0.0%
36	96.1%
37	110.0%
38	100.0%
39	95.5%
40	0.0%
41	92.8%
42	77.1%
43	90.0%
44	45.2%
45	100.0%
46	71.4%
47	NA
48	59.2%
49	59.6%

Note: Lots 4, 25, and 47 (all NAs) were used for utility purposes (storage, loading dock, etc.) and spaces were not counted.

APPENDIX C: TRANSPORTATION SURVEY QUESTIONS

NAVFAC Washington requests your participation in a survey relating to transportation options for commuting and inter-installation (between bases) travel. The survey should take about 5-10 minutes and will help inform decisions both across the region and for individual installations/bases.

Please complete all the questions. The survey is divided into three short sections; section 1 with general questions about you, section 2 with questions specific to your base/installation, and section 3 with questions about your daily commute.

Thank you for your assistance in improving the commuter and local business travel experience for employees in the NDW region!

1. What is your HOME zip code (+ four digit extension, if known)?

Zip Code + 4 if known

2. Are you:

- Military?
- Civilian?
- Semi-Permanent Contractor?
- Other contractor?

Other (please specify)

3. At which base or installation are you based or do you usually work?

- Washington Navy Yard
- Naval Support Activity Bethesda
- Joint Base Anacostia-Bolling
- Naval Research Laboratory
- Naval Support Facility Suitland
- Naval Support Facility Naval Observatory
- Naval Support Facility Carderock
- Naval Support Facility Arlington
- Naval Support Facility Dahlgren
- Naval Support Facility Indian Head
- Naval Support Facility Annapolis
- Naval Research Lab Chesapeake Beach
- Naval Air Station Patuxent River
- Naval Recreation Center Solomons Island
- Outlying Landing Field Webster

Other (please specify)

(Questions 4 and 5 were not applicable to NRL.)

TRANSPORTATION SURVEY QUESTIONS

6. In performing your work duties which other NDW installations or bases do you regularly visit (weekly or more often)? (check all that apply)

- I don't travel to other bases
- Naval Support Activity Bethesda
- Joint Base Anacostia-Bolling
- Washington Navy Yard
- Naval Support Facility Suitland
- Naval Support Facility Naval Observatory
- Naval Support Facility Carderock
- Naval Support Facility Arlington
- Naval Support Facility Dahlgren
- Naval Support Facility Indian Head
- Naval Support Facility Annapolis
- Naval Research Lab Chesapeake Beach
- Naval Air Station Patuxent River
- Naval Recreation Center Solomons Island
- Outlying Landing Field Webster

Other (please specify)

7. Are you aware of the Metropolitan Washington Council of Governments' (MWCOG) guaranteed ride home program that is available to carpool riders and transit users and have you signed up for it?
If you would like more information about guaranteed ride home, copy this URL and paste it into another window on your browser: http://www.mwcog.org/commuter2/commuter/grh/index.html

- Not aware of it
- Aware, not signed up
- Aware, signed up
- Have used it

8. Do you use public transit (rail, bus, light rail, etc.) for non-work purposes?

- Yes
- No

9. IN PERIODS OF GOOD WEATHER, what are your main modes of transportation to work on a weekly basis? Check all that apply. (If you walk or drive and then take transit, check boxes on both rows.)

	1 day	2 days	3 days	4 days	5 days	6 days	7 days
Drive alone							
Metro Rail							
Commuter bus							
Public transit or circulator bus							
Shuttle bus							
Carpool or vanpool							
Bicycle							

Walk
Telecommute
Other

10. IN PERIODS OF COLD OR POOR WEATHER, what are your main modes of transportation to work on a weekly basis? Check all that apply. (If you walk or drive and then take transit, check boxes on both rows.)

	1 day	2 days	3 days	4 days	5 days	6 days	7 days
Drive alone							
Metro Rail							
Commuter bus							
Public transit or circulator bus							
Shuttle bus							
Carpool or vanpool							
Bicycle							
Walk							
Telecommute							
Other							

Other (please specify)

11. Are you currently receiving the Federal Mass Transit Fringe Benefits Program? (This is a subsidy to federal employees of up to $230/month for mass transit and vanpool commuting costs.)

- No, I've chosen not to or I have a parking pass instead.
- No, not aware of the program.
- Yes, and it covers ALL of my commuting costs.
- Yes, and it covers SOME of my commuting costs.
- Not applicable, I'm not a federal employee.
- I do carpool/vanpool
- I prefer mass transit, walking, or biking
- I am concerned about how I would leave early in the event of an emergency (or how I would get a ride home if my driver had an emergency)

12. What is the main reason you are currently not utilizing carpool/vanpool options?

- I prefer to commute by myself
- I work inconsistent hours, limited possibilities to carpool/vanpool
- I have tried to join a car/vanpool but have been unsuccessful
- I do not know where/how to apply
- I have before or after work obligations (daycare, 2nd job, school, etc.)
- I need my vehicle for meetings during the day

Other (please specify)

13. What is your usual work start time?

- 0100-0159
- 0200-0259
- 0300-0359
- 0400-0459
- 0500-0559
- 0600-0659

- 0700-0759
- 0800-0859
- 0900-0959
- 1000-1059
- 1100-1159
- 1200-1259
- 1300-1359
- 1400-1459
- 1500-1559
- 1600-1659
- 1700-1759
- 1800-1859
- 1900-1959
- 2000-2059
- 2100-2159
- 2200-2259
- 2300-2359
- 2400-0059

14. What is your usual work ending time?

- 0100-0159
- 0200-0259
- 0300-0359
- 0400-0459
- 0500-0559
- 0600-0659
- 0700-0759
- 0800-0859
- 0900-0959
- 1000-1059
- 1100-1159
- 1200-1259
- 1300-1359
- 1400-1459
- 1500-1559
- 1600-1659
- 1700-1759
- 1800-1859
- 1900-1959
- 2000-2059
- 2100-2159
- 2200-2259
- 2300-2359
- 2400-0059

15. If you primarily drive alone, vanpool, or carpool to work, where do you usually park?

- On base
- Off base
- Not applicable to me, I don't normally drive, vanpool, or carpool to work

16. If you park on installation, do you park in a designated space or any available?

- Designated CARPOOL/VANPOOL space
- Designated space or group of spaces (e.g., Executive)
- Any available space

17. If you drive alone to work and park off-installation how much do you pay for parking?

- Not applicable to me
- Free - no cost to me
- Less than $5.00 per day ($110 per mo)
- $5.00 per day ($110 per mo) to $7.49 per day ($163 per mo)
- $7.50 per day ($164 per mo) to $9.99 per day ($217 per mo)
- $10.00 per day ($218 per mo) or more

18. If you drive alone or ride in a car/van pool, how far is the walk from your parking location to your normal work station?

- Not applicable to me, I walk, bicycle, use transit, etc.
- Less than 3 minutes
- 3 to 5 minutes
- 5 to 10 minutes
- More than 10 minutes
- Not applicable to me, I walk, bicycle, use transit, etc.

19. In your opinion, would your job duties allow you to use an alternate work schedule (AWS) such as four 10-hour days, work 9 hours/day with every other Friday off, etc.?

- Yes, and I DO currently work an AWS
- Yes, but I CHOOSE NOT to work an AWS
- Yes, but I DO NOT HAVE THE OPTION of an AWS
- No, but I WOULD be interested in an AWS otherwise
- No, and I WOULD NOT be interested in an AWS

20. In your opinion, would your job duties allow you to work from home (telecommute) one or more days per week, if it were an option?

- Yes, and I WOULD consider teleworking if offered
- Yes, but I WOULD NOT consider teleworking
- Yes, and I currently telework (at times)
- No, but I WOULD otherwise consider teleworking
- No, and I WOULD NOT consider teleworking

21. If reliable shuttle service were available from nearby transit hubs (bus, train, etc) to your work location would you be more inclined to use mass transportation?

- No, I walk or bike to work
- No
- Not Likely
- Possibly
- Very Likely
- Yes
- I already use transit

22. If made available by your employer, would more flexible work hours or days such as a shift schedule with the option to work 0600-01400 or 1400-2200 benefit you in balancing your home and work schedule?

- No
- Not Likely
- Possibly
- Very Likely
- Yes
- I already work flex hours

23. If additional bicycle-friendly amenities (e.g. covered racks, permanent lockers, changing/shower areas) were made available would you consider bicycling to work (either starting or doing so more often)?

- No
- Not Likely
- Possibly
- Very Likely
- Yes
- Biking amenities are not the main issue for me.

24. In the space below, please include questions, comments, and/or suggestions for improving transportation at your installation. Your comments will be carefully considered by the transportation planning team. All comments are anonymous.